AD-A036 522 CLEMSON UNIV S C COLL OF ENGINEERING F/G 13/2
A SYSTEMS ANALYSIS OF WATER QUALITY SURVEY DESIGN. APPENDIX I. --ETC(U)
AUG 75 L C WILCOX, B E GILLILAND DADA17-72-C-2152
UNCLASSIFIED NL

1 OF 2
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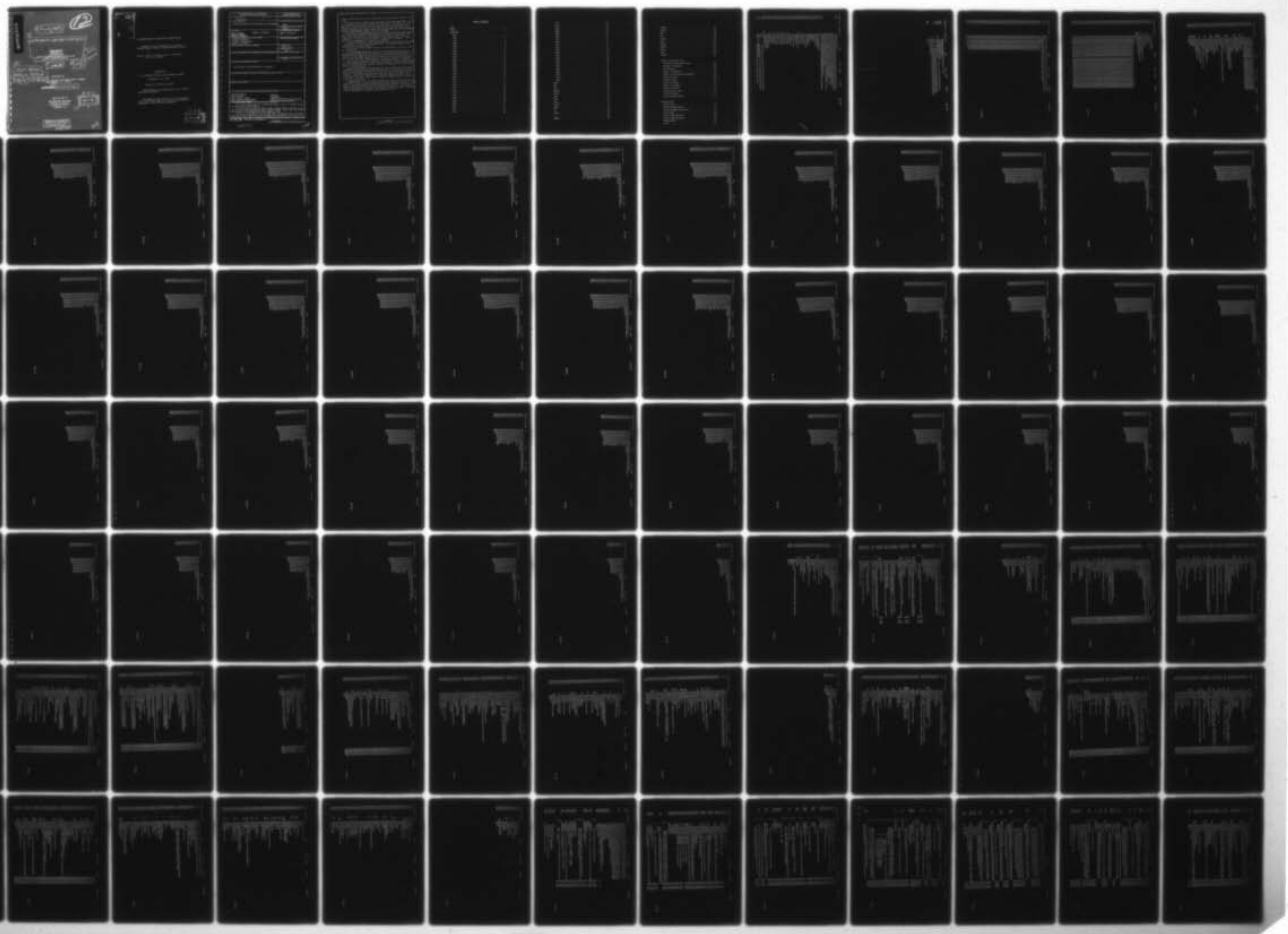

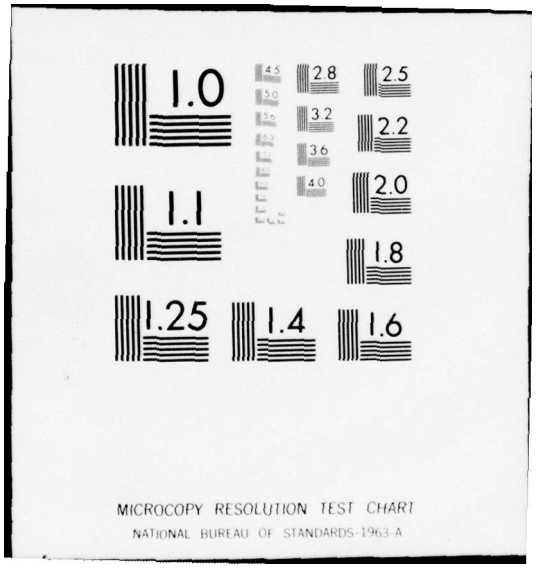
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(6) A SYSTEMS ANALYSIS OF WATER QUALITY SURVEY DESIGN -

~~FINAL REPORT~~
APPENDIX I.
DOCUMENTATION
SURVEY PLANNING PROGRAM LISTING AND
EXAMPLE PROBLEM OUTPUT.

see listing in AD-A036521

(10) Lyle C. Wilcox,
Bobby E. Gilliland
Ralph W. Gilchrist

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A SYSTEMS ANALYSIS OF WATER QUALITY SURVEY DESIGN

Appendix I of the Documentation of the Survey Planning Computer Program. Program and Output Listing.

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Water Quality Measurements

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This is the final report of a three year project titled, "A Systems Analysis of Water Quality Survey Design."

In this project a study was made of water quality surveys conducted by the United States Army Environmental Hygiene Agency (AEHA). Mainly data and reports from studies of Army Ammunition Plants (AAP) were used.

The focus of this project was the development of computer aided procedures which would assure efficient use of manpower and equipment and assure that the measurements taken give a reasonalbe representation of the system. Planning the

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survey, conducting the survey and reporting on the survey were included in the study.

The site modeling program models the manufacturing processes which contribute pollutants to the system, models the sewer system, and models the treatment system including acid or caustic neutralization, settling ponds, and domestic treatment. The inputs to the model are the production levels of the manufacturing processes and the outputs are the predicted pollutant measurement values at each possible measure point in the system.

The resource matching program accepts data defining proposed measurements and matches these against the available time, manpower, and equipment. The output lists the pollutant to be measured at each measure point, the total commitment of time for each analyst and for each piece of equipment. Note is made of any overcommitment of manpower or equipment.

The model refinement or updating program accepts measurements taken during a preliminary survey or during a regular survey and computes suggested new parameters for the process models.

The indicator model program evaluates the performance of sanitary treatment facilities.

The program uses design data, data from the operating log and/or data generated during the survey and computes key operational characteristics. Comparing these with desirable values as cited in design books and manuals will give the survey planner insight into the operation of the system and suggest the need for more survey measurements or the need for changes in operation.

A system was developed for automatic instrumentation of pH, conductivity, and other parameters which use strip charp recordings. Interface hardware was selected and purchased and interface software was developed for direct connection to a digital computer.

A data handling system was developed for use during and after the survey. A PDP8-OS/8 and peripheral equipment was purchased. Software was developed to perform data handling functions and to direct the user in application of the software. The program accepts raw data from the analytical chemist and performs data conversions, transcriptions, and data logging functions. Output is available in several forms as may be needed for various reports during and at the end of the survey.

Recommendations are: the survey planner should obtain sufficient data in a proliminary survey to model and analyze the site; measurements should be automated to the maximum extent possible; data handling should be delegated to the computer when the operations are well defined and repetitive. The programs, software and hardware included here will assist the survey planner in following these recommendations and design a more effective survey.

TABEL OF CONTENTS

```
0001                  COMMON/MAST/MASTER
0002                  DIMENSION XNAME(25),ELE(25),YNAME(25),VAL(25),SUM(25),SUMA(25),FLO
                     1W(25),SPLIST(25,25),CAP(25),A(25,25),C(25,25),X(25,25),P(25,25),B(
                     225,25),Y(25,25),EFF(25),NPLIST(25),NBRNCH(25,2),POLN(25,5),PC(25,2
                     35,25),IBN(51,26),NTEMP(25),SAMFRE(25),NMA(25),MENAME(25,3,5),
                     4IDO(25,25),NPLA(25),PCRM(25,3),PM(25,25,3),NALOW(25,25),PMDA
                     5TA(25,3,4,5),SMEQTI(75),EQUSED(25,75),EU(75),SUMM(6),
                     6AMAR(25,27),TEMP(4,2),EQTIME(75),CNSTAR(6),BRANCH(25,25),B
                     7RN(25),EQNAME(75,5),RANK(25),FLGPT(25),NROUT(25),NFLOW(25),VNSP(75
                     8),NSET(25,3),USENO(75),PT(25),NTB(25)
0003                  INTEGER ELE,A,POLN,EQUSED,EU,EQNAME,USENO,SUM,SUMA
0004                  INTEGER*2 NPLIST,NPLA,IBN,NTEMP,NMA,AMAR,PM,IDO,FP,NALOW,BRN,BRANC
                     1H
0005                  DATA EQUSED/1875*0/
0006                  DATA VNSP/75*0./
0007                  DATA EU/75*0/
0008                  MPARM=25
0009                  MSORS=25
0010                  MBRNC=25
0011                  MEQ=75
0012                  MBRP1=MBRNC+1
0013                  MP2=MBRNC+2
0014                  DO 10 I=1,MPARM
0015                  DO 11 J=1,3
0016                  NSET(I,J)=0
0017                  PCRM(I,J)=0.
0018                  DO 11 K=1,4
0019                  DO 11 L=1,5
0020                 11 PMDATA(I,J,K,L)=0.
0021                  SAMFRE(I)=0.
0022                  NMA(I)=0
0023                  DO 12 J=1,MBRNC
0024                  Y(J,I)=0.
0025                  NALOW(I,J)=0
0026                  DO 12 K=1,25
0027                 12 PC(I,K,J)=0.
0028                  DO 13 J=1,25
0029                  DO 13 K=1,3
0030                 13 PM(I,J,K)=0
0031                  DO 10 J=1,MP2
0032                 10 AMAR(I,J)=0
0033                  DO 14 I=1,25
0034                 14 NPLA(I)=0
0035                  DO 15 I=1,MEQ
0036                  SMEQTI(I)=0.
0037                 15 EQTIME(I)=0.
0038                  DO 16 I=1,6
0039                  CNSTAR(I)=0.
0040                 16 SUMM(I)=0.
0041                  READ(1,900)MASTER
0042                  READ(1,900)NFLAG
0043                  READ(1,900)EPSLON
0044                900 FORMAT(I5)
0045                  CALL       PROCES(XNAME,ELE,YNAME,VAL,FLOW,SPLIST,CAP,JM,MSORS,MPA
                     1RM)
0046                  CALL       START(A,C,NPLIST,FLOW,SPLIST,NBRNCH,MSORS,MPARM,MBRNC,P
                     1OLN,XNAME,NTEMP,SAMFRE,NMA)
0047                  CALL       TOP(A,C,X,P,Y,FLOW,EFF,NPLIST,NBRNCH,POLN,XNAME,
```

```
                     1RANK,FLGPT,MSORS,MPARM,MBRNC,TEST,PT,NTB)
0048                  IF(TEST.EQ.1.)GO TO 1
0049                  IF(EPSLON.EQ.0)GO TO 901
0050                  CALL CORRCT(NPLIST,C,EFF,X,FLOW,A,P,Y,POLN,MSORS,MPARM,MBRNC)
0051                901 IF(NFLAG.NE.0)GO TO 1
0052                  CALL LEVEL(&1,Y,A,PC,IBN,MSORS,SUM,SUMA,MPARM,MBRNC,MBRP1,NPLA)
0053                  CALL       RM(POLN,MENAME,IDO,NMA,NPLA,PC,PCRM,PM,IBN,NALOW,PMD
                     1ATA,NTEMP,NROUT,NFLOW,SMEQTI,SAMFRE,EQUSED,EU,SUMM,NSET,AMAR,TEMP,
                     2EQTIME,NPLIST,USENO,CNSTAR,NBRNCH,BRANCH,BRN,EQNAME,MPARM,MBRNC,MB
                     4RP1,MEQ,MP2,VNSP)
0054                1     STOP
0055                  END
```

```
0001              SUBROUTINE PROCES(XNAME,ELE,YNAME,VAL,FLOW,SPLIST,CAP,JM,MSORS,MPA
                 1RM)
0002              DIMENSION XNAME(MSORS),ELE(MPARM),YNAME(MSORS),VAL(MPARM),FLOW(MSO
                 1RS),SPLIST(MSORS,MPARM),CAP(MSORS),ZNAME(25),FLW(25)
0003              INTEGER ELE
0004              DATA PAPC/4HPAPC/
0005              DATA PAOP/4HPAOP/
0006              DATA PSAC/4HPSAC/
0007              DATA PNAC/4HPNAC/
0008              DATA PBDN/4HPBDN/
0009              DATA PBIX/4HPBIX/
0010              DATA PCOW/4HPCOW/
0011              DATA PNBP/4HPNBP/
0012              DATA PBPP/4HPBPP/
0013              DATA PBEX/4HPBEX/
0014              DATA PNCS/4HPNCS/
0015              DATA PNGS/4HPNGS/
0016              DATA PPND/4HPPND/
0017              DATA PAPP/4HPAPP/
0018              DATA PSWG/4HPSWG/
0019              DATA PCWZ/4HPCWZ/
0020              DATA PPAS/4HPPAS/
0021              DATA PPCU/4HPPCU/
0022              DATA PPCW/4HPPCW/
0023              DATA PFSW/4HPFSW/
0024              DATA PFCU/4HPFCU/
0025              DATA PFCW/4HPFCW/
0026              DATA PTCW/4HPTCW/
0027              DATA PSAR/4HPSAR/
0028              DATA PSAW/4HPSAW/
0029              DATA PANP/4HPANP/
0030              DATA PPHE/4HPPHE/
0031              DATA PCLE/4HPCLE/
0032              DATA PCIX/4HPCIX/
0033              DATA PAIX/4HPAIX/
0034              DATA PCWB/4HPCWB/
0035              DATA PAPN/4HPAPN/
0036              DATA PNDN/4HPNDN/
0037              DATA PGRB/4HPGRB/
0038              DATA PSAZ/4HPSAZ/
0039              DATA PTNT/4HPTNT/
0040              DATA PPHZ/4HPPHZ/
0041              DATA PSTP/4HPSTP/
0042              DATA PCWL/4HPCWL/
0043              DATA PODW/4HPODW/
0044              DATA PRWS/4HPRWS/
0045              DATA PAPS/4HPAPS/
0046              DATA PADR/4HPADR/
0047              DATA PZPP/4HPZPP/
0048              DATA PCAP/4HPCAP/
0049              DATA PAPK/4HPAPK/
0050              DATA PAHC/4HPAHC/
0051              DATA PZPD/4HPZPD/
0052              DATA PCAD/4HPCAD/
0053              DATA PCOA/4HPCOA/
0054              DATA PCOP/4HPCOB/
0055              DO 5 LD=1,MSORS
0056              FLOW(LD)=0.0
```

00003

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0057              DO 6 LS=1,MPARM
0058              SPLIST(LD,LS)=0.0
0059            6 CONTINUE
0060            5 CONTINUE
0061              READ(1,10) N
0062           10 FORMAT(1X,I2)
0063              DO 100 JM=1,N
0064              READ(1,200) XNAME(JM),CAP(JM)
0065          200 FORMAT(1X,A4,1X,F6.2)
0066              WRITE(3,210) XNAME(JM),CAP(JM)
0067          210 FORMAT(1X,A4,3X,F6.2)
0068          100 CONTINUE
0069              JM=0
0070              DO 300 JM=1,N
0071              IF(XNAME(JM).EQ.PAPC)CALL SAPC(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0072              IF(XNAME(JM).EQ.PAOP)CALL SAOP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0073              IF(XNAME(JM).EQ.PSAC)CALL SSAC(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0074              IF(XNAME(JM).EQ.PNAC)CALL SNAC(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0075              IF(XNAME(JM).EQ.PBON)CALL SBON(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0076              IF(XNAME(JM).EQ.PBIX)CALL SBIX(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0077              IF(XNAME(JM).EQ.PCOW)CALL SCOW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0078              IF(XNAME(JM).EQ.PNBP)CALL SNBP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0079              IF(XNAME(JM).EQ.PBPP)CALL SBPP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0080              IF(XNAME(JM).EQ.PBEX)CALL SBEX(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0081              IF(XNAME(JM).EQ.PNCS)CALL SNCS(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0082              IF(XNAME(JM).EQ.PNGS)CALL SNGS(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0083              IF(XNAME(JM).EQ.PPND)CALL SPND(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0084              IF(XNAME(JM).EQ.PAPP)CALL SAPP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0085              IF(XNAME(JM).EQ.PSWG)CALL SSWG(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0086              IF(XNAME(JM).EQ.PCWZ)CALL SCWZ(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0087              IF(XNAME(JM).EQ.PPAS)CALL SPAS(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0088              IF(XNAME(JM).EQ.PPCU)CALL SPCU(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0089              IF(XNAME(JM).EQ.PPCW)CALL SPCW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0090              IF(XNAME(JM).EQ.PFSW)CALL SFSW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0091              IF(XNAME(JM).EQ.PFCU)CALL SFCU(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0092              IF(XNAME(JM).EQ.PFCW)CALL SFCW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0093              IF(XNAME(JM).EQ.PTCW)CALL STCW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0094              IF(XNAME(JM).EQ.PSAR)CALL SSAR(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0095              IF(XNAME(JM).EQ.PSAW)CALL SSAW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0096              IF(XNAME(JM).EQ.PANP)CALL SANP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0097              IF(XNAME(JM).EQ.PPHE)CALL SPHE(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0098              IF(XNAME(JM).EQ.PCLE)CALL SCLE(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0099              IF(XNAME(JM).EQ.PCIX)CALL SCIX(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0100              IF(XNAME(JM).EQ.PAIX)CALL SAIX(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0101              IF(XNAME(JM).EQ.PCWB)CALL SCWB(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0102              IF(XNAME(JM).EQ.PAPN)CALL SAPN(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0103              IF(XNAME(JM).EQ.PNDN)CALL SNDN(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0104              IF(XNAME(JM).EQ.PGRB)CALL SGRB(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0105              IF(XNAME(JM).EQ.PSAZ)CALL SSAZ(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0106              IF(XNAME(JM).EQ.PTNT)CALL STNT(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0107              IF(XNAME(JM).EQ.PPHZ)CALL SPHZ(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0108              IF(XNAME(JM).EQ.PSTP)CALL SSTP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0109              IF(XNAME(JM).EQ.PCWL)CALL SCWL(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0110              IF(XNAME(JM).EQ.PODW)CALL SODW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0111              IF(XNAME(JM).EQ.PRWS)CALL SRWS(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0112              IF(XNAME(JM).EQ.PAPS)CALL SAPS(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0113              IF(XNAME(JM).EQ.PADR)CALL SADR(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0114              IF(XNAME(JM).EQ.PZPP)CALL SZPP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
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00001

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0115              IF(XNAME(JM).EQ.PCAP)CALL SCAP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0116              IF(XNAME(JM).EQ.PZPK)CALL SAPK(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0117              IF(XNAME(JM).EQ.PAHC)CALL SAHC(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0118              IF(XNAME(JM).EQ.PZPD)CALL SZPD(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0119              IF(XNAME(JM).EQ.PCAD)CALL SCAD(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0120              IF(XNAME(JM).EQ.PCOA)CALL SCOA(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0121              IF(XNAME(JM).EQ.PCOB)CALL SCOB(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0122          300 CONTINUE
0123              READ(1,400)NOD
0124          400 FORMAT(1X,I1)
0125              WRITE(3,400)NOD
0126              IF(NOD)860,860,600
0127          600 READ(1,700)NMOD
0128          700 FORMAT(1X,I3)
0129              WRITE(3,700)NMOD
0130              DO 800 NM=1,NMOD
0131              READ(1,750)YNAME(NM),ELE(NM),VAL(NM)
0132              WRITE(3,750)YNAME(NM),ELE(NM),VAL(NM)
0133          750 FORMAT(1X,A4,1X,I2,1X,F9.2)
0134          800 CONTINUE
0135              DO 825 NM=1,NMOD
0136              DO 850 JM=1,N
0137              IF(YNAME(NM).EQ.XNAME(JM))SPLIST(JM,ELE(NM))=VAL(NM)
0138          850 CONTINUE
0139          825 CONTINUE
0140          860 READ(1,875)NPRO
0141          875 FORMAT(1X,I1)
0142              WRITE(3,875)NPRO
0143              IF(NPRO)500,500,880
0144          880 READ(1,890)NUMP
0145          890 FORMAT(1X,I2)
0146              READ(1,890)NELE
0147              DO 900 JN=1,NUMP
0148              READ(1,895)ZNAME(JN),FLW(JN)
0149          895 FORMAT(1X,A4,1X,F6.4)
0150              DO 925 JE=1,N
0151              IF(ZNAME(JN).EQ.XNAME(JE))GO TO 896
0152              GO TO 925
0153          896 FLOW(JE)=.01*CAP(JE)*FLW(JN)
0154              DO 897 JK=1,NELE
0155              READ(1,898)SPLIST(JE,JK)
0156          898 FORMAT(1X,F9.2)
0157          897 CONTINUE
0158          925 CONTINUE
0159          900 CONTINUE
0160          500 RETURN
0161              END
```

00005

```
0001                SUBROUTINE SAPC(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.26
0004                SPLIST(JM,1)=7.7
0005                SPLIST(JM,2)=21
0006                SPLIST(JM,3)=416
0007                SPLIST(JM,4)=13
0008                SPLIST(JM,5)=1.3
0009                SPLIST(JM,6)=240
0010                SPLIST(JM,7)=14
0011                SPLIST(JM,8)=1.8
0012                SPLIST(JM,9)=243
0013                SPLIST(JM,10)=1.9
0014                SPLIST(JM,11)=122
0015                SPLIST(JM,12)=50
0016                SPLIST(JM,13)=0.02
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=1.7
0019                SPLIST(JM,16)=0.0
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.03
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=98
0024                SPLIST(JM,21)=0.0
0025                SPLIST(JM,22)=79
0026                SPLIST(JM,24)=2
0027                RETURN
0028                END
```

```
0001                SUBROUTINE SAOP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*3.6
0004                SPLIST(JM,1)=7.5
0005                SPLIST(JM,2)=22
0006                SPLIST(JM,3)=346
0007                SPLIST(JM,4)=8
0008                SPLIST(JM,5)=1.3
0009                SPLIST(JM,6)=240
0010                SPLIST(JM,7)=3.2
0011                SPLIST(JM,8)=0.03
0012                SPLIST(JM,9)=244
0013                SPLIST(JM,10)=0.7
0014                SPLIST(JM,11)=90
0015                SPLIST(JM,12)=50
0016                SPLIST(JM,13)=0.16
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=1.3
0019                SPLIST(JM,16)=102
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=.03
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=68
0024                SPLIST(JM,21)=77
0025                SPLIST(JM,22)=69
0026                SPLIST(JM,24)=3.4
0027                RETURN
0028                END
```

```
0001                SUBROUTINE SSAC(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*13.0
0004                SPLIST(JM,1)=2.5
0005                SPLIST(JM,2)=25
0006                SPLIST(JM,3)=726
0007                SPLIST(JM,4)=22
0008                SPLIST(JM,5)=0.74
0009                SPLIST(JM,6)=360
0010                SPLIST(JM,7)=3.7
0011                SPLIST(JM,8)=2.3
0012                SPLIST(JM,9)=403
0013                SPLIST(JM,10)=40
0014                SPLIST(JM,11)=90
0015                SPLIST(JM,12)=262
0016                SPLIST(JM,13)=0.16
0017                SPLIST(JM,14)=10
0018                SPLIST(JM,15)=9.3
0019                SPLIST(JM,16)=102
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.63
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=68
0024                SPLIST(JM,21)=77
0025                SPLIST(JM,22)=0
0026                SPLIST(JM,23)=10
0027                SPLIST(JM,24)=90
0028                RETURN
0029                END
```

```
0001                SUBROUTINE SNAC(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*4.8
0004                SPLIST(JM,1)=6.3
0005                SPLIST(JM,2)=36
0006                SPLIST(JM,3)=726
0007                SPLIST(JM,4)=6.8
0008                SPLIST(JM,5)=0.5
0009                SPLIST(JM,6)=593
0010                SPLIST(JM,7)=29
0011                SPLIST(JM,8)=1.1
0012                SPLIST(JM,9)=603
0013                SPLIST(JM,10)=7.1
0014                SPLIST(JM,11)=90
0015                SPLIST(JM,12)=262
0016                SPLIST(JM,13)=0.16
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=9.3
0019                SPLIST(JM,16)=102
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=.03
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=68
0024                SPLIST(JM,21)=77
0025                SPLIST(JM,22)=50
0026                SPLIST(JM,23)=15
0027                SPLIST(JM,24)=9.2
0028                RETURN
0029                END
```

```
0001                SUBROUTINE SBDN(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.08
0004                SPLIST(JM,1)=6.4
0005                SPLIST(JM,2)=20
0006                SPLIST(JM,3)=0.0
0007                SPLIST(JM,4)=11
0008                SPLIST(JM,5)=0.65
0009                SPLIST(JM,6)=270
0010                SPLIST(JM,7)=0.8
0011                SPLIST(JM,8)=2.2
0012                SPLIST(JM,9)=300
0013                SPLIST(JM,10)=30
0014                SPLIST(JM,11)=122
0015                SPLIST(JM,12)=50
0016                SPLIST(JM,13)=0.02
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=1.7
0019                SPLIST(JM,16)=0.0
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.63
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=92
0024                SPLIST(JM,21)=0.0
0025                SPLIST(JM,22)=62
0026                SPLIST(JM,24)=10
0027                RETURN
0028                END
```

00020

```
0001              SUBROUTINE SBIX(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002              DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003              FLOW(JM)=.01*CAP(JM)*100.0
0004              SPLIST(JM,1)=7.0
0005              SPLIST(JM,2)=31
0006              SPLIST(JM,3)=0.0
0007              SPLIST(JM,4)=17
0008              SPLIST(JM,5)=0.65
0009              SPLIST(JM,6)=251
0010              SPLIST(JM,7)=0.53
0011              SPLIST(JM,8)=2.2
0012              SPLIST(JM,9)=254
0013              SPLIST(JM,10)=2.7
0014              SPLIST(JM,11)=122
0015              SPLIST(JM,12)=76
0016              SPLIST(JM,13)=0.02
0017              SPLIST(JM,14)=0.0
0018              SPLIST(JM,15)=1.7
0019              SPLIST(JM,16)=0.0
0020              SPLIST(JM,17)=0.0
0021              SPLIST(JM,18)=0.63
0022              SPLIST(JM,19)=0.0
0023              SPLIST(JM,20)=0.0
0024              SPLIST(JM,21)=0.0
0025              SPLIST(JM,22)=62
0026              RETURN
0027              END
```

```
0001                SUBROUTINE SCOW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)**4.8
0004                SPLIST(JM,1)=6.4
0005                SPLIST(JM,2)=20
0006                SPLIST(JM,3)=600
0007                SPLIST(JM,4)=11
0008                SPLIST(JM,5)=0.74
0009                SPLIST(JM,6)=390
0010                SPLIST(JM,7)=0.5
0011                SPLIST(JM,8)=2.3
0012                SPLIST(JM,9)=440
0013                SPLIST(JM,10)=40
0014                SPLIST(JM,11)=90
0015                SPLIST(JM,12)=50
0016                SPLIST(JM,13)=0.16
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=9.3
0019                SPLIST(JM,16)=10
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.63
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=60
0024                SPLIST(JM,21)=77
0025                SPLIST(JM,22)=100
0026                SPLIST(JM,23)=3.0
0027                SPLIST(JM,24)=10
0028                RETURN
0029                END
```

```
0001                SUBROUTINE SNBP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.C1*CAP(JM)*1.6
0004                SPLIST(JM,1)=2.5
0005                SPLIST(JM,2)=140
0006                SPLIST(JM,3)=564
0007                SPLIST(JM,4)=34
0008                SPLIST(JM,5)=0.3
0009                SPLIST(JM,6)=2600
0010                SPLIST(JM,7)=104
0011                SPLIST(JM,8)=17
0012                SPLIST(JM,9)=2650
0013                SPLIST(JM,10)=5
0014                SPLIST(JM,11)=25
0015                SPLIST(JM,12)=2000
0016                SPLIST(JM,13)=0.0
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=32
0019                SPLIST(JM,16)=12
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.60
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=20
0024                SPLIST(JM,21)=6.67
0025                SPLIST(JM,22)=0
0026                SPLIST(JM,23)=4
0027                SPLIST(JM,24)=100
0028                RETURN
0029                END
```

```
0001                SUBROUTINE SBPP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.30
0004                SPLIST(JM,1)=5.3
0005                SPLIST(JM,2)=90
0006                SPLIST(JM,3)=357
0007                SPLIST(JM,4)=42
0008                SPLIST(JM,5)=0.14
0009                SPLIST(JM,6)=530
0010                SPLIST(JM,7)=7.5
0011                SPLIST(JM,8)=0.7
0012                SPLIST(JM,9)=590
0013                SPLIST(JM,10)=55
0014                SPLIST(JM,11)=35
0015                SPLIST(JM,12)=64
0016                SPLIST(JM,13)=0.0
0017                SPLIST(JM,14)=85
0018                SPLIST(JM,15)=24
0019                SPLIST(JM,16)=55.0
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=4.81
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=20
0024                SPLIST(JM,21)=27.9
0025                SPLIST(JM,22)=58
0026                SPLIST(JM,23)=76
0027                SPLIST(JM,24)=30
0028                RETURN
0029                END
```

```
0001                SUBROUTINE SBEX(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.45
0004                SPLIST(JM,1)=6.2
0005                SPLIST(JM,2)=20
0006                SPLIST(JM,3)=1000
0007                SPLIST(JM,4)=27
0008                SPLIST(JM,5)=0.74
0009                SPLIST(JM,6)=186
0010                SPLIST(JM,7)=0.63
0011                SPLIST(JM,8)=2.2
0012                SPLIST(JM,9)=200
0013                SPLIST(JM,10)=14
0014                SPLIST(JM,11)=90
0015                SPLIST(JM,12)=38
0016                SPLIST(JM,13)=0.16
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=9.8
0019                SPLIST(JM,16)=102
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.63
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=70
0024                SPLIST(JM,21)=77
0025                SPLIST(JM,22)=62
0026                RETURN
0027                END
```

09015

```
0001                SUBROUTINE SNCS(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*2.0
0004                SPLIST(JM,1)=7.0
0005                SPLIST(JM,2)=63
0006                SPLIST(JM,3)=1200
0007                SPLIST(JM,4)=63
0008                SPLIST(JM,5)=1.3
0009                SPLIST(JM,6)=523
0010                SPLIST(JM,7)=5.8
0011                SPLIST(JM,8)=5.2
0012                SPLIST(JM,9)=531
0013                SPLIST(JM,10)=8
0014                SPLIST(JM,11)=90
0015                SPLIST(JM,12)=110
0016                SPLIST(JM,13)=0.16
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=9.3
0019                SPLIST(JM,16)=102
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.63
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=68
0024                SPLIST(JM,21)=0.03
0025                SPLIST(JM,22)=80
0026                RETURN
0027                END
```

```
0001              SUBROUTINE SNGS(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002              DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003              FLOW(JM)=.01*CAP(JM)*0.09
0004              SPLIST(JM,1)=7.3
0005              SPLIST(JM,2)=72
0006              SPLIST(JM,3)=1220
0007              SPLIST(JM,4)=63
0008              SPLIST(JM,5)=1.66
0009              SPLIST(JM,6)=523
0010              SPLIST(JM,7)=5.8
0011              SPLIST(JM,8)=2.54
0012              SPLIST(JM,9)=531
0013              SPLIST(JM,10)=8
0014              SPLIST(JM,11)=90
0015              SPLIST(JM,12)=50
0016              SPLIST(JM,13)=0.03
0017              SPLIST(JM,14)=0.0
0018              SPLIST(JM,15)=0.0
0019              SPLIST(JM,16)=0.0
0020              SPLIST(JM,17)=0.0
0021              SPLIST(JM,18)=0.68
0022              SPLIST(JM,19)=0.0
0023              SPLIST(JM,20)=70
0024              SPLIST(JM,21)=2.9
0025              SPLIST(JM,22)=60
0026              SPLIST(JM,23)=11.1
0027              SPLIST(JM,24)=20
0028              RETURN
0029              END
```

```
0001              SUBROUTINE SPND(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002              DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003              FLOW(JM)=.01*CAP(JM)*100.0
0004              SPLIST(JM,1)=6.0
0005              SPLIST(JM,2)=20
0006              SPLIST(JM,3)=0.0
0007              SPLIST(JM,4)=11
0008              SPLIST(JM,5)=0.74
0009              SPLIST(JM,6)=250
0010              SPLIST(JM,7)=0.5
0011              SPLIST(JM,8)=2.3
0012              SPLIST(JM,9)=290
0013              SPLIST(JM,10)=29
0014              SPLIST(JM,11)=90
0015              SPLIST(JM,12)=50
0016              SPLIST(JM,13)=0.16
0017              SPLIST(JM,14)=0.0
0018              SPLIST(JM,15)=9.3
0019              SPLIST(JM,16)=102
0020              SPLIST(JM,17)=0.0
0021              SPLIST(JM,18)=0.63
0022              SPLIST(JM,19)=0.0
0023              SPLIST(JM,20)=0.0
0024              SPLIST(JM,21)=77
0025              SPLIST(JM,22)=70
0026              RETURN
0027              END
```

```
0001                SUBROUTINE SAPP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*100.0
0004                SPLIST(JM,1)=6.2
0005                SPLIST(JM,2)=20
0006                SPLIST(JM,3)=0.0
0007                SPLIST(JM,4)=11
0008                SPLIST(JM,5)=0.65
0009                SPLIST(JM,6)=270
0010                SPLIST(JM,7)=4.0
0011                SPLIST(JM,8)=2.2
0012                SPLIST(JM,9)=300
0013                SPLIST(JM,10)=30
0014                SPLIST(JM,11)=122
0015                SPLIST(JM,12)=50
0016                SPLIST(JM,13)=0.02
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=1.7
0019                SPLIST(JM,16)=0.0
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.63
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=0.0
0024                SPLIST(JM,21)=0.0
0025                SPLIST(JM,22)=62
0026                RETURN
0027                END
```

```
0001                SUBROUTINE SSWG(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*100.0
0004                SPLIST(JM,1)=6.7
0005                SPLIST(JM,2)=55
0006                SPLIST(JM,3)=534
0007                SPLIST(JM,4)=11.0
0008                SPLIST(JM,5)=1.5
0009                SPLIST(JM,6)=259
0010                SPLIST(JM,7)=1.4
0011                SPLIST(JM,8)=1.5
0012                SPLIST(JM,9)=283
0013                SPLIST(JM,10)=18
0014                SPLIST(JM,11)=123.0
0015                SPLIST(JM,12)=68
0016                SPLIST(JM,13)=0.1
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=17.3
0019                SPLIST(JM,16)=12
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=1.0
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=0.0
0024                SPLIST(JM,21)=11.4
0025                SPLIST(JM,22)=79
0026                RETURN
0027                END
```

```
0001                SUBROUTINE SCWZ(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*100.0
0004                SPLIST(JM,1)=6.4
0005                SPLIST(JM,2)=20
0006                SPLIST(JM,3)=0.0
0007                SPLIST(JM,4)=11
0008                SPLIST(JM,5)=0.74
0009                SPLIST(JM,6)=390
0010                SPLIST(JM,7)=0.5
0011                SPLIST(JM,8)=2.3
0012                SPLIST(JM,9)=440
0013                SPLIST(JM,10)=40
0014                SPLIST(JM,11)=90
0015                SPLIST(JM,12)=50
0016                SPLIST(JM,13)=0.16
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=9.3
0019                SPLIST(JM,16)=102
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.63
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=0.0
0024                SPLIST(JM,21)=77
0025                SPLIST(JM,22)=70
0026                RETURN
0027                END
```

```
0001                SUBROUTINE SPAS(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*.0015
0004                SPLIST(JM,1)=5.43
0005                SPLIST(JM,2)=17
0006                SPLIST(JM,3)=392
0007                SPLIST(JM,4)=11
0008                SPLIST(JM,5)=0.0
0009                SPLIST(JM,6)=270
0010                SPLIST(JM,7)=7
0011                SPLIST(JM,8)=2.73
0012                SPLIST(JM,9)=221
0013                SPLIST(JM,10)=1.7
0014                SPLIST(JM,11)=100
0015                SPLIST(JM,12)=73
0016                SPLIST(JM,13)=0.0
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=0.0
0019                SPLIST(JM,16)=0.0
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.0
0022                SPLIST(JM,19)=4.0
0023                SPLIST(JM,20)=75
0024                SPLIST(JM,21)=278
0025                SPLIST(JM,22)=28
0026                RETURN
0027                END
```

00022

```
0001              SUBROUTINE SPCU(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002              DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003              FLOW(JM)=.01*CAP(JM)*.02
0004              SPLIST(JM,1)=7.8
0005              SPLIST(JM,2)=15
0006              SPLIST(JM,3)=100
0007              SPLIST(JM,4)=20
0008              SPLIST(JM,5)=150
0009              SPLIST(JM,6)=3.0
0010              SPLIST(JM,7)=100
0011              SPLIST(JM,8)=3.0
0012              SPLIST(JM,9)=1.0
0013              SPLIST(JM,10)=7.4
0014              SPLIST(JM,11)=100
0015              SPLIST(JM,12)=150
0016              SPLIST(JM,13)=0.0
0017              SPLIST(JM,14)=0.0
0018              SPLIST(JM,15)=0.0
0019              SPLIST(JM,16)=0.0
0020              SPLIST(JM,17)=0.0
0021              SPLIST(JM,18)=0.0
0022              SPLIST(JM,19)=150
0023              SPLIST(JM,20)=75
0024              SPLIST(JM,21)=100
0025              SPLIST(JM,22)=65
0026              RETURN
0027              END
```

```
0001                SUBROUTINE SPCW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*.90
0004                SPLIST(JM,1)=7.1
0005                SPLIST(JM,2)=23
0006                SPLIST(JM,3)=27
0007                SPLIST(JM,4)=0.0
0008                SPLIST(JM,5)=0.0
0009                SPLIST(JM,6)=161
0010                SPLIST(JM,7)=6
0011                SPLIST(JM,8)=1.1
0012                SPLIST(JM,9)=229
0013                SPLIST(JM,10)=68
0014                SPLIST(JM,11)=100
0015                SPLIST(JM,12)=53
0016                SPLIST(JM,13)=0.0
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=0.0
0019                SPLIST(JM,16)=62
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.0
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=75
0024                SPLIST(JM,21)=17
0025                SPLIST(JM,22)=49
0026                RETURN
0027                END
```

```
0001                SUBROUTINE SFSW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*.0024
0004                SPLIST(JM,1)=7.4
0005                SPLIST(JM,2)=174
0006                SPLIST(JM,3)=137
0007                SPLIST(JM,4)=66
0008                SPLIST(JM,5)=0.0
0009                SPLIST(JM,6)=156
0010                SPLIST(JM,7)=4.4
0011                SPLIST(JM,8)=2.67
0012                SPLIST(JM,9)=158
0013                SPLIST(JM,10)=2.1
0014                SPLIST(JM,11)=100
0015                SPLIST(JM,12)=25
0016                SPLIST(JM,13)=0.0
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=0.0
0019                SPLIST(JM,16)=0.0
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.0
0022                SPLIST(JM,19)=608
0023                SPLIST(JM,20)=75
0024                SPLIST(JM,21)=358
0025                SPLIST(JM,22)=68
0026                RETURN
0027                END
```

00025

```
0001                SUBROUTINE SFCU(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*.01
0004                SPLIST(JM,1)=8.7
0005                SPLIST(JM,2)=16.3
0006                SPLIST(JM,3)=112
0007                SPLIST(JM,4)=24
0008                SPLIST(JM,5)=0.0
0009                SPLIST(JM,6)=165
0010                SPLIST(JM,7)=3.0
0011                SPLIST(JM,8)=1.0
0012                SPLIST(JM,9)=173
0013                SPLIST(JM,10)=7.4
0014                SPLIST(JM,11)=100
0015                SPLIST(JM,12)=16
0016                SPLIST(JM,13)=0.0
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=0.0
0019                SPLIST(JM,16)=0.0
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.0
0022                SPLIST(JM,19)=47
0023                SPLIST(JM,20)=75
0024                SPLIST(JM,21)=111
0025                SPLIST(JM,22)=65
0026                RETURN
0027                END
```

00026

```
0001              SUBROUTINE SFCW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002              DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003              FLOW(JM)=.01*CAP(JM)*0.15
0004              SPLIST(JM,1)=7.1
0005              SPLIST(JM,2)=23
0006              SPLIST(JM,3)=27
0007              SPLIST(JM,4)=0.0
0008              SPLIST(JM,5)=0.0
0009              SPLIST(JM,6)=161
0010              SPLIST(JM,7)=6.0
0011              SPLIST(JM,8)=1.1
0012              SPLIST(JM,9)=229
0013              SPLIST(JM,10)=68
0014              SPLIST(JM,11)=100
0015              SPLIST(JM,12)=53
0016              SPLIST(JM,13)=0.0
0017              SPLIST(JM,14)=0.0
0018              SPLIST(JM,15)=0.0
0019              SPLIST(JM,16)=62
0020              SPLIST(JM,17)=0.0
0021              SPLIST(JM,18)=0.0
0022              SPLIST(JM,19)=0.0
0023              SPLIST(JM,20)=75
0024              SPLIST(JM,21)=17
0025              SPLIST(JM,22)=60
0026              RETURN
0027              END
```

00027

```
0001                SUBROUTINE STCW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.36
0004                SPLIST(JM,1)=9.83
0005                SPLIST(JM,2)=0.0
0006                SPLIST(JM,3)=13700
0007                SPLIST(JM,4)=0.0
0008                SPLIST(JM,5)=0.0
0009                SPLIST(JM,6)=18113
0010                SPLIST(JM,7)=2.0
0011                SPLIST(JM,8)=0.0
0012                SPLIST(JM,9)=18180
0013                SPLIST(JM,10)=67
0014                SPLIST(JM,11)=100
0015                SPLIST(JM,12)=10633
0016                SPLIST(JM,13)=0.0
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=0.0
0019                SPLIST(JM,16)=0.0
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.0
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=75
0024                SPLIST(JM,21)=0.0
0025                SPLIST(JM,22)=13123
0026                RETURN
0027                END
```

```
0001                SUBROUTINE SSAR(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*1.5
0004                SPLIST(JM,1)=7.1
0005                SPLIST(JM,2)=23
0006                SPLIST(JM,3)=27
0007                SPLIST(JM,4)=0.0
0008                SPLIST(JM,5)=0.0
0009                SPLIST(JM,6)=161
0010                SPLIST(JM,7)=6.0
0011                SPLIST(JM,8)=1.1
0012                SPLIST(JM,9)=227
0013                SPLIST(JM,10)=68
0014                SPLIST(JM,11)=100
0015                SPLIST(JM,12)=53
0016                SPLIST(JM,13)=0.0
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=0.0
0019                SPLIST(JM,16)=62
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.0
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=75
0024                SPLIST(JM,21)=17
0025                SPLIST(JM,22)=49
0026                RETURN
0027                END
```

```
0001                SUBROUTINE SSAW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.01
0004                SPLIST(JM,1)=2.5
0005                SPLIST(JM,2)=0.0
0006                SPLIST(JM,3)=0.0
0007                SPLIST(JM,4)=0.0
0008                SPLIST(JM,5)=0.0
0009                SPLIST(JM,6)=0.0
0010                SPLIST(JM,7)=150
0011                SPLIST(JM,8)=0.0
0012                SPLIST(JM,9)=100.0
0013                SPLIST(JM,10)=0.0
0014                SPLIST(JM,11)=200
0015                SPLIST(JM,12)=1500
0016                SPLIST(JM,13)=0.0
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=0.0
0019                SPLIST(JM,16)=0.0
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.0
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=150
0024                SPLIST(JM,21)=0.0
0025                SPLIST(JM,22)=0.0
0026                SPLIST(JM,24)=100
0027                RETURN
0028                END
```

00000

```
0001                SUBROUTINE SANP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*100.0
0004                SPLIST(JM,1)=3.4
0005                SPLIST(JM,2)=57
0006                SPLIST(JM,3)=4485
0007                SPLIST(JM,4)=57
0008                SPLIST(JM,5)=0.0
0009                SPLIST(JM,6)=2217
0010                SPLIST(JM,7)=64
0011                SPLIST(JM,8)=4.2
0012                SPLIST(JM,9)=2305
0013                SPLIST(JM,10)=87
0014                SPLIST(JM,11)=0.0
0015                SPLIST(JM,12)=1554
0016                SPLIST(JM,13)=0.0
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=0.0
0019                SPLIST(JM,16)=0.0
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.0
0022                SPLIST(JM,19)=91
0023                SPLIST(JM,20)=0.0
0024                SPLIST(JM,21)=575
0025                SPLIST(JM,22)=60
0026                RETURN
0027                END
```

00031

```
0001                SUBROUTINE SPHE(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*100.0
0004                SPLIST(JM,1)=7.4
0005                SPLIST(JM,2)=15
0006                SPLIST(JM,3)=0.0
0007                SPLIST(JM,4)=9
0008                SPLIST(JM,5)=0.0
0009                SPLIST(JM,6)=500
0010                SPLIST(JM,7)=4.0
0011                SPLIST(JM,8)=0.0
0012                SPLIST(JM,9)=560
0013                SPLIST(JM,10)=56
0014                SPLIST(JM,11)=0.0
0015                SPLIST(JM,12)=240
0016                SPLIST(JM,13)=0.0
0017                SPLIST(JM,14)=0.0
0018                SPLIST(JM,15)=0.0
0019                SPLIST(JM,16)=0.0
0020                SPLIST(JM,17)=0.0
0021                SPLIST(JM,18)=0.0
0022                SPLIST(JM,19)=0.0
0023                SPLIST(JM,20)=0.0
0024                SPLIST(JM,21)=0.0
0025                SPLIST(JM,22)=0.0
0026                RETURN
0027                END
```

```
0001              SUBROUTINE SCLE(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002              DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003              FLOW(JM)=.01*CAP(JM)*100.0
0004              SPLIST(JM,1)=0.0
0005              SPLIST(JM,2)=6.8
0006              SPLIST(JM,3)=0.0
0007              SPLIST(JM,4)=5
0008              SPLIST(JM,5)=0.0
0009              SPLIST(JM,6)=0.0
0010              SPLIST(JM,7)=640
0011              SPLIST(JM,8)=0.0
0012              SPLIST(JM,9)=0.0
0013              SPLIST(JM,10)=3.0
0014              SPLIST(JM,11)=0.0
0015              SPLIST(JM,12)=220
0016              SPLIST(JM,13)=0.0
0017              SPLIST(JM,14)=0.0
0018              SPLIST(JM,15)=0.0
0019              SPLIST(JM,16)=0.0
0020              SPLIST(JM,17)=0.0
0021              SPLIST(JM,18)=0.0
0022              SPLIST(JM,19)=2.2
0023              SPLIST(JM,20)=0.0
0024              SPLIST(JM,21)=0.0
0025              SPLIST(JM,22)=0.0
0026              RETURN
0027              END
```

```
0001              SUBROUTINE SCIX(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002              DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003              FLOW(JM)=0.01*CAP(JM)*0.32
0004              SPLIST(JM,1)=2.1
0005              SPLIST(JM,3)=13000
0006              SPLIST(JM,4)=5
0007              SPLIST(JM,7)=0.53
0008              SPLIST(JM,8)=2.2
0009              SPLIST(JM,9)=6000
0010              SPLIST(JM,10)=3.0
0011              SPLIST(JM,11)=2500
0012              SPLIST(JM,12)=35000
0013              SPLIST(JM,15)=35
0014              SPLIST(JM,16)=1.0
0015              SPLIST(JM,18)=0.6
0016              SPLIST(JM,19)=0.0
0017              SPLIST(JM,20)=.2000
0018              SPLIST(JM,22)=0.0
0019              SPLIST(JM,23)=3.0
0020              SPLIST(JM,24)=500
0021              RETURN
0022              END
```

```
0001                SUBROUTINE SAIX(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=0.01*CAP(JM)*0.170
0004                SPLIST(JM,1)=12
0005                SPLIST(JM,3)=10500
0006                SPLIST(JM,4)=5
0007                SPLIST(JM,7)=24
0008                SPLIST(JM,8)=0.0
0009                SPLIST(JM,9)=3000.
0010                SPLIST(JM,10)=3.0
0011                SPLIST(JM,12)=2200
0012                SPLIST(JM,15)=53
0013                SPLIST(JM,16)=1.0
0014                SPLIST(JM,18)=0.6
0015                SPLIST(JM,19)=0.0
0016                SPLIST(JM,20)=0.0
0017                SPLIST(JM,22)=500
0018                SPLIST(JM,23)=3.0
0019                SPLIST(JM,24)=0.0
0020                RETURN
0021                END
```

```
0001                SUBROUTINE SCWB(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=0.01*CAP(JM)*0.17
0004                SPLIST(JM,1)=7.5
0005                SPLIST(JM,3)=600
0006                SPLIST(JM,4)=10
0007                SPLIST(JM,7)=10
0008                SPLIST(JM,8)=0.0
0009                SPLIST(JM,9)=1000.
0010                SPLIST(JM,10)=3.0
0011                SPLIST(JM,12)=500
0012                SPLIST(JM,15)=100
0013                SPLIST(JM,16)=1.0
0014                SPLIST(JM,18)=0.5
0015                SPLIST(JM,19)=0.0
0016                SPLIST(JM,20)=20
0017                SPLIST(JM,22)=100
0018                SPLIST(JM,23)=3.0
0019                SPLIST(JM,24)=40
0020                RETURN
0021                END
```

```
0001                SUBROUTINE SAPN(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=0.01*CAP(JM)*0.30
0004                SPLIST(JM,1)=7.0
0005                SPLIST(JM,3)=600
0006                SPLIST(JM,4)=5
0007                SPLIST(JM,7)=11
0008                SPLIST(JM,8)=0.0
0009                SPLIST(JM,9)=750
0010                SPLIST(JM,10)=5.0
0011                SPLIST(JM,12)=600
0012                SPLIST(JM,15)=15
0013                SPLIST(JM,16)=1.0
0014                SPLIST(JM,18)=0.5
0015                SPLIST(JM,19)=0.0
0016                SPLIST(JM,20)=20
0017                SPLIST(JM,22)=60
0018                SPLIST(JM,23)=10.0
0019                SPLIST(JM,24)=60
0020                RETURN
0021                END
```

```
0001                SUBROUTINE SNDN(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=0.01*CAP(JM)*0.30
0004                SPLIST(JM,1)=2.0
0005                SPLIST(JM,3)=5000
0006                SPLIST(JM,4)=10
0007                SPLIST(JM,7)=300
0008                SPLIST(JM,8)=5
0009                SPLIST(JM,9)=300
0010                SPLIST(JM,10)=5.0
0011                SPLIST(JM,12)=1000
0012                SPLIST(JM,15)=25
0013                SPLIST(JM,16)=1.0
0014                SPLIST(JM,18)=0.5
0015                SPLIST(JM,19)=2.0
0016                SPLIST(JM,20)=20
0017                SPLIST(JM,22)=0.0
0018                SPLIST(JM,23)=10.0
0019                SPLIST(JM,24)=500
0020                RETURN
0021                END
```

```
0001                SUBROUTINE SGRB(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=0.01*CAP(JM)*0.002
0004                SPLIST(JM,1)=3.0
0005                SPLIST(JM,3)=1000
0006                SPLIST(JM,4)=10
0007                SPLIST(JM,7)=10
0008                SPLIST(JM,8)=1.0
0009                SPLIST(JM,9)=400
0010                SPLIST(JM,10)=10
0011                SPLIST(JM,12)=100
0012                SPLIST(JM,15)=15
0013                SPLIST(JM,16)=2.0
0014                SPLIST(JM,18)=0.5
0015                SPLIST(JM,19)=0.0
0016                SPLIST(JM,20)=20
0017                SPLIST(JM,22)=0.0
0018                SPLIST(JM,23)=5.0
0019                SPLIST(JM,24)=400
0020                RETURN
0021                END
```

```
0001                SUBROUTINE SSAZ(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=0.01*CAP(JM)*0.30
0004                SPLIST(JM,1)=.3
0005                SPLIST(JM,3)=200000
0006                SPLIST(JM,4)=20
0007                SPLIST(JM,7)=0.5
0008                SPLIST(JM,8)=5
0009                SPLIST(JM,9)=500
0010                SPLIST(JM,10)=10
0011                SPLIST(JM,12)=96000
0012                SPLIST(JM,15)=15
0013                SPLIST(JM,16)=2.0
0014                SPLIST(JM,18)=0.5
0015                SPLIST(JM,19)=1.0
0016                SPLIST(JM,20)=20
0017                SPLIST(JM,22)=0.0
0018                SPLIST(JM,23)=10.0
0019                SPLIST(JM,24)=96000
0020                RETURN
0021                END
```

00020

```
0001                SUBROUTINE STNT(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=0.01*CAP(JM)*0.10
0004                SPLIST(JM,1)=1.5
0005                SPLIST(JM,3)=40000
0006                SPLIST(JM,4)=40
0007                SPLIST(JM,7)=1000
0008                SPLIST(JM,8)=8
0009                SPLIST(JM,9)=20000
0010                SPLIST(JM,10)=10
0011                SPLIST(JM,12)=2500
0012                SPLIST(JM,15)=1500
0013                SPLIST(JM,16)=5.0
0014                SPLIST(JM,18)=0.5
0015                SPLIST(JM,19)=10.0
0016                SPLIST(JM,20)=20
0017                SPLIST(JM,22)=0.0
0018                SPLIST(JM,23)=5.0
0019                SPLIST(JM,24)=5000
0020                RETURN
0021                END
```

```
0001                SUBROUTINE SPHZ(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=0.01*CAP(JM)*0.02
0004                SPLIST(JM,1)=7.4
0005                SPLIST(JM,3)=1000
0006                SPLIST(JM,4)=9
0007                SPLIST(JM,7)=4
0008                SPLIST(JM,8)=0.0
0009                SPLIST(JM,9)=560
0010                SPLIST(JM,10)=10
0011                SPLIST(JM,12)=240
0012                SPLIST(JM,15)=20
0013                SPLIST(JM,16)=2.0
0014                SPLIST(JM,18)=20.0
0015                SPLIST(JM,19)=0.0
0016                SPLIST(JM,20)=7.0
0017                SPLIST(JM,22)=200
0018                SPLIST(JM,23)=8.0
0019                SPLIST(JM,24)=10
0020                RETURN
0021                END
```

```
0001                SUBROUTINE SSTP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=0.01*CAP(JM)*0.5
0004                SPLIST(JM,1)=7.0
0005                SPLIST(JM,3)=800
0006                SPLIST(JM,4)=25
0007                SPLIST(JM,7)=4
0008                SPLIST(JM,8)=8
0009                SPLIST(JM,9)=650
0010                SPLIST(JM,10)=12
0011                SPLIST(JM,12)=120
0012                SPLIST(JM,15)=28
0013                SPLIST(JM,16)=10.0
0014                SPLIST(JM,18)=2.3
0015                SPLIST(JM,19)=0.0
0016                SPLIST(JM,20)=105
0017                SPLIST(JM,22)=79
0018                SPLIST(JM,23)=12.0
0019                SPLIST(JM,24)=70
0020                RETURN
0021                END
```

```
0001                SUBROUTINE SCWL(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.061
0004                SPLIST(JM,2)=16.
0005                SPLIST(JM,1)=8.4
0006                SPLIST(JM,3)=700.
0007                SPLIST(JM,6)=637.
0008                SPLIST(JM,7)=.6
0009                SPLIST(JM,8)=2.3
0010                SPLIST(JM,9)=643.
0011                SPLIST(JM,10)=6.
0012                SPLIST(JM,12)=140.
0013                SPLIST(JM,15)=90.
0014                SPLIST(JM,18)=.35
0015                SPLIST(JM,21)=43.
0016                SPLIST(JM,22)=130.
0017                SPLIST(JM,23)=20.
0018                SPLIST(JM,24)=4.
0019                RETURN
0020                END
```

```
0001                SUBROUTINE SODW(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.05
0004                SPLIST(JM,1)=7.1
0005                SPLIST(JM,2)=104.
0006                SPLIST(JM,3)=740.
0007                SPLIST(JM,6)=580.
0008                SPLIST(JM,7)=.2
0009                SPLIST(JM,8)=4.
0010                SPLIST(JM,9)=620.
0011                SPLIST(JM,10)=40.
0012                SPLIST(JM,12)=145.
0013                SPLIST(JM,15)=110.
0014                SPLIST(JM,18)=.12
0015                SPLIST(JM,22)=200.
0016                SPLIST(JM,23)=30.
0017                SPLIST(JM,24)=33.
0018                RETURN
0019                END
```

```
0001                SUBROUTINE SRWS(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.039
0004                SPLIST(JM,1)=9.63
0005                SPLIST(JM,2)=74.25
0006                SPLIST(JM,3)=4314.
0007                SPLIST(JM,6)=2362.
0008                SPLIST(JM,7)=19.7
0009                SPLIST(JM,8)=10.3
0010                SPLIST(JM,9)=2657.
0011                SPLIST(JM,10)=304.
0012                SPLIST(JM,18)=23.4
0013                SPLIST(JM,20)=150
0014                SPLIST(JM,22)=200
0015                SPLIST(JM,23)=15.3
0016                SPLIST(JM,24)=10
0017                RETURN
0018                END
```

```
0001                SUBROUTINE SAPS(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.05
0004                SPLIST(JM,1)=13.64
0005                SPLIST(JM,2)=78.
0006                SPLIST(JM,3)=240792.
0007                SPLIST(JM,6)=271009.
0008                SPLIST(JM,7)=16.3
0009                SPLIST(JM,8)=166.
0010                SPLIST(JM,9)=279071.
0011                SPLIST(JM,10)=10061.
0012                SPLIST(JM,18)=525.
0013                SPLIST(JM,20)=150
0014                SPLIST(JM,22)=1250
0015                SPLIST(JM,24)=0.0
0016                RETURN
0017                END
```

```
0001                SUBROUTINE SADR(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.05
0004                SPLIST(JM,1)=12.7
0005                SPLIST(JM,2)=47.5
0006                SPLIST(JM,3)=280835.
0007                SPLIST(JM,6)=71878.
0008                SPLIST(JM,7)=4.4
0009                SPLIST(JM,8)=55.
0010                SPLIST(JM,9)=72610.
0011                SPLIST(JM,10)=732.
0012                SPLIST(JM,18)=419.
0013                SPLIST(JM,20)=200
0014                SPLIST(JM,22)=725
0015                SPLIST(JM,24)=0.0
0016                RETURN
0017                END
```

```
0001                SUBROUTINE SZPP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*100.0
0004                SPLIST(JM,1)=2.6
0005                SPLIST(JM,2)=164.3
0006                SPLIST(JM,3)=8006.
0007                SPLIST(JM,6)=20707.
0008                SPLIST(JM,7)=1565.
0009                SPLIST(JM,8)=25.2
0010                SPLIST(JM,9)=20825.
0011                SPLIST(JM,10)=132.
0012                SPLIST(JM,18)=1029.
0013                SPLIST(JM,20)=150
0014                SPLIST(JM,22)=0.0
0015                SPLIST(JM,24)=200
0016                RETURN
0017                END
```

```
0001                SUBROUTINE SCAP(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.05
0004                SPLIST(JM,1)=2.8
0005                SPLIST(JM,2)=10.
0006                SPLIST(JM,3)=2245.
0007                SPLIST(JM,6)=2526.
0008                SPLIST(JM,7)=177.
0009                SPLIST(JM,8)=53.
0010                SPLIST(JM,9)=2550.
0011                SPLIST(JM,10)=24.
0012                SPLIST(JM,18)=51.
0013                SPLIST(JM,20)=150
0014                SPLIST(JM,22)=0.0
0015                SPLIST(JM,24)=200
0016                RETURN
0017                END
```

00850

```
0001                SUBROUTINE SAPK(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.144
0004                SPLIST(JM,1)=7.76
0005                SPLIST(JM,2)=154.
0006                SPLIST(JM,3)=773.
0007                SPLIST(JM,6)=1412.
0008                SPLIST(JM,7)=1004.
0009                SPLIST(JM,8)=65.
0010                SPLIST(JM,9)=2140.
0011                SPLIST(JM,10)=728.
0012                SPLIST(JM,18)=77.
0013                SPLIST(JM,20)=200
0014                SPLIST(JM,22)=100
0015                RETURN
0016                END
```

```
0001              SUBROUTINE SAHC(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002              DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003              FLOW(JM)=.01*CAP(JM)*0.173
0004              SPLIST(JM,1)=9.5
0005              SPLIST(JM,2)=61.5
0006              SPLIST(JM,3)=21301.
0007              SPLIST(JM,6)=57510.
0008              SPLIST(JM,7)=1354.
0009              SPLIST(JM,8)=294.
0010              SPLIST(JM,9)=58470.
0011              SPLIST(JM,10)=960.
0012              SPLIST(JM,18)=742.
0013              SPLIST(JM,20)=200
0014              SPLIST(JM,22)=200
0015              RETURN
0016              END
```

```
0001              SUBROUTINE SZPD(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002              DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003              FLOW(JM)=.01*CAP(JM)*0.317
0004              SPLIST(JM,1)=3.0
0005              SPLIST(JM,2)=57.
0006              SPLIST(JM,3)=8349.
0007              SPLIST(JM,6)=33584.
0008              SPLIST(JM,7)=1459.
0009              SPLIST(JM,8)=64.7
0010              SPLIST(JM,9)=33700.
0011              SPLIST(JM,10)=115.
0012              SPLIST(JM,18)=1164.
0013              SPLIST(JM,20)=200
0014              SPLIST(JM,22)=10
0015              SPLIST(JM,24)=100
0016              RETURN
0017              END
```

```
0001                SUBROUTINE SCAD(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.129
0004                SPLIST(JM,1)=3.7
0005                SPLIST(JM,2)=50.5
0006                SPLIST(JM,3)=1164.
0007                SPLIST(JM,6)=1940.
0008                SPLIST(JM,7)=18.2
0009                SPLIST(JM,8)=4.8
0010                SPLIST(JM,9)=1951.
0011                SPLIST(JM,10)=11.
0012                SPLIST(JM,18)=174
0013                SPLIST(JM,20)=200
0014                SPLIST(JM,22)=10
0015                SPLIST(JM,24)=150
0016                RETURN
0017                END
```

```
0001                SUBROUTINE SCOA(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*0.05
0004                SPLIST(JM,1)=8.2
0005                SPLIST(JM,6)=22000
0006                SPLIST(JM,9)=24000
0007                SPLIST(JM,10)=1500
0008                SPLIST(JM,20)=200
0009                SPLIST(JM,22)=120
0010                RETURN
0011                END
```

```
0001                SUBROUTINE SCOB(FLOW,SPLIST,CAP,JM,MSORS,MPARM)
0002                DIMENSION FLOW(MSORS),SPLIST(MSORS,MPARM),CAP(MSORS)
0003                FLOW(JM)=.01*CAP(JM)*100.0
0004                SPLIST(JM,1)=8.4
0005                SPLIST(JM,6)=13501.
0006                SPLIST(JM,9)=14373.
0007                SPLIST(JM,10)=1020.
0008                RETURN
0009                END
```

```
0001              SUBROUTINE START(A,C,NPLIST,FLOW,SPLIST,NBRNCH,MSORS,MPARM,MBRNC,P
                 1OLN,XNAME,NTEMP,SAMFRE,NMA)
0002              DIMENSION A(MSORS,MBRNC),C(MSORS,MPARM),NPLIST(MPARM),FLOW(MSORS),
                 1SPLIST(MSORS,MPARM),NBRNCH(MBRNC,2),POLN(MPARM,5),XNAME(MSORS),NTE
                 2MP(MPARM),SAMFRE(MPARM),NMA(MPARM)
0003              COMMON/STOPL/NS,NB,NTOP
0004              COMMON/ALPTOP/NSS,NP
0005              COMMON/MAST/MASTER
0006              COMMON/PASS/NRP,NRB
0007              INTEGER*2 NPLIST
0008              INTEGER A
0009              READ(1,1) NS,NB,NP,NTOP
0010         1    FORMAT(4I5)
0011              READ(1,900)(NPLIST(I),I=1,NP)
0012           900 FORMAT(25I3)
0013              DO 2 J=1,NS
0014              READ(1,3) (A(J,I),I=1,NB)
0015         3    FORMAT((80I1))
0016         2    CONTINUE
0017              DO 30 I=1,NB
0018            30 READ(1,901)(NBRNCH(I,J),J=1,2)
0019           901 FORMAT(2A4)
0020              N=1
0021              DO 10 I=1,MASTER
0022              IF(NPLIST(N).NE.I)GO TO 10
0023              DO 20 J=1,NS
0024            20 C(J,N)=SPLIST(J,I)
0025              N=N+1
0026            10 CONTINUE
0027              NSS=NS
0028              CALL       CHK1(A,C,FLOW,POLN,XNAME,NTEMP,NPLIST,SAMFRE,NMA,MSORS,
                 1MPARM,MBRNC)
0029              NRP=NP
0030              NRB=NB
0031              RETURN
0032              END
```

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```
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0001              SUBROUTINE CHK1(A,C,FLOW,POLN,XNAME,NTEMP,NPLIST,SAMFRE,NMA,MSORS,
                 1MPARM,MBRNC)
0002              DIMENSION A(MSORS,MBRNC),C(MSORS,MPARM),NPLIST(MPARM),FLOW(MSORS),
                 1POLN(MPARM,5),XNAME(MSORS),NTEMP(MPARM),SAMFRE(MPARM),NMA(MPARM)
0003              COMMON/MAST/MASTER
0004              COMMON/STOPL/NS,NB,NTOP
0005              COMMON/ALPTOP/NSS,NP
0006              COMMON/NAMED/LENGTH
0007              COMMON/NAMEC/ISTOP
0008              INTEGER*2 NMA,NTEMP,NPLIST
0009              INTEGER POLN,A
0010              READ(1,903)LENGTH
0011            903 FORMAT(I2)
                C                                                                    RM   450
                C          READ & PRINT THE NUMBER OF PARAMETERS, THEIR NAMES, & METHODS RM   500
                C          FOR EACH PARAMETER                                        RM   550
                C                                                                    RM   600
0012              READ(1,100)ISTOP
0013            100 FORMAT(I2)
0014            105 FORMAT(/1X,'PARAMETER #',2X,'PARAMETER NAME', 2X,'# OF METHODS AVA
                   1IL. FOR ANAL.',3X,'# OF SAMPLES TO BE ANALYZED/DAY/SAMPLE POINT,TO
                   2TAL #SAMPLES/POINT')
0015            115 FORMAT( 6X,I2,6X,5A4, 8X,I1,34X,F6.1,34X,F7.1)
0016              PRINT101                                                           RM   750
0017            101 FORMAT('1')                                                      RM   800
0018              PRINT102,NP,ISTOP                                                  RM   850
0019              WRITE(3,905)LENGTH
0020            905 FORMAT('0','THE LENGTH OF THE SURVEY IS ',I2,' DAYS')
0021            102 FORMAT('-THE NUMBER OF PARAMETERS = ',I2/' THE FIRST ',I2,' ARE NORM   900
                   1N-COMPETING PARAMETERS')                                         RM   950
0022              PRINT105                                                           RM  1000
0023              N=1
0024              DO 200 I=1,MASTER
0025              IF(NPLIST(N).EQ.I)READ110,(POLN(N,II),II=1,5),NMA(N),SAMFRE(N)
0026              IF(NPLIST(N).EQ.I)TOT=SAMFRE(N)*LENGTH
0027              IF(NPLIST(N).EQ.I)PRINT115,N,(POLN(N,II),II=1,5),NMA(N),SAMFRE(N),
                 1TOT
0028              IF(NPLIST(N).EQ.I)SAMFRE(N)=TOT
0029              IF(NPLIST(N).EQ.I)NTEMP(I)=NMA(N)
0030              IF(NPLIST(N).NE.I)READ110,(POLN(N+1,II),II=1,5),NTEMP(I),SAMFRE(N+
                 11)
0031              IF(NPLIST(N).EQ.I)N=N+1
0032            110 FORMAT(5A4,5X,I1,4X,F6.1)                                        RM  1250
0033            200 CONTINUE                                                         RM  1400
0034              WRITE(3,10)
0035             10 FORMAT('1',10X,'TOPOLOGICAL DEFINITION DATA',///,5X,'NUMBER OF SOU
                 1RCES',5X,'NUMBER OF BRANCHES',5X,'NUMBER OF OUTFALLS',/)
0036              WRITE(3,1) NS,NB,NTOP
0037              1 FORMAT(' ',10X,I5,20X,I5,20X,I5,/////,10X,'TOPOLOGY MATRIX DATA',/
                 1/)                                                                                00053
0038              DO 2 K=1,NS
0039              WRITE(3,3)K,XNAME(K),(A(K,J),J=1,NB)
0040              3 FORMAT(' ',5X,'SOURCE',I2,2X,A4,5X,80I1)
0041              2 CONTINUE
0042              WRITE(3,4)
0043              4 FORMAT(' ',2X,/////,' ','POLLUTANT MATRIX DATA',//)
0044              DO 40 J=1,NS
0045             40 WRITE(3,904)J,XNAME(J),FLOW(J)
```

```
0046          904 FORMAT('0','SOURCE ',I2,2X,A4,2X,'FLOW  ',F10.3)
0047              I=1
0048              NNP=NP
0049              IND=0
0050              IF(NP.GT.6)GO TO 30
0051           33 WRITE(3,900)((POLN(J,K),K=1,5),J=I,NNP)
0052              WRITE(3,901)
0053          901 FORMAT(' ',' SOURCE')
0054              DO 20 J=1,NS
0055           20 WRITE(3,902)J,XNAME(J),(C(J,K),K=I,NNP)
0056          900 FORMAT('0',2X,'PARAMETER ',6(5A4))
0057          902 FORMAT('0',1X,I2,1X,A4,4X,6(F10.3,10X))
0058              IF(IND.NE.0)GO TO 31
0059              GO TO 5
0060           30 IF(IND.EQ.0)I=1
0061              IF(IND.EQ.0)NNP=6
0062              IF(IND.GT.0)GO TO 32
0063              IND=IND+1
0064              GO TO 33
0065           32 I=NNP+1
0066              MAT=NNP+6
0067              IF(MAT.GT.NP)NNP=NP
0068              IF(MAT.GT.NP)GO TO 33
0069              NNP=MAT
0070              GO TO 33
0071           31 IF(NNP.EQ.NP)GO TO 5
0072              GO TO 30
0073         5    CONTINUE
0074              RETURN
0075              END
```

```
0001            SUBROUTINE TOP(A,C,X,P,Y,FLOW,EFF,NPLIST,NBRNCH,POLN,XNAME,      00000010
               1RANK,FLGPT,MSORS,MPARM,MBRNC,TEST,PT,NTB)                        00000020
0002            DIMENSION A(MSORS,MBRNC),C(MSORS,MPARM),X(MBRNC,MPARM),P(MSORS,MPA00000030
               1RM),Y(MBRNC,MPARM),FLOW(MSORS),                                  00000040
               2NPLIST(MPARM),EFF(MBRNC),NBRNCH(MBRNC,2),POLN(MPARM,5),XNAME(MSORS00000050
               3),RANK(MPARM),FLGPT(MPARM),PT(MPARM),NTB(MPARM)                  00000060
0003            COMMON/STOPL/NS,NB,NTOP                                          00000070
0004            COMMON/ALPTOP/NSS,NP                                             00000080
0005            COMMON/TOPLEV/NBB,NPP                                            00000090
0006            INTEGER A                                                        00000100
0007            INTEGER*2 NPLIST                                                 00000110
0008            TEST=0.                                                          00000120
0009            DO 10 I=1,NB                                                     00000130
0010            DO 10 J=1,NP                                                     00000140
0011          10 X(I,J)=0.                                                       00000150
0012            READ 20,AREA                                                     00000160
0013          20 FORMAT(F5.2)                                                    00000170
0014            READ 21,MNEUT                                                    00000180
0015          21 FORMAT(I1)                                                      00000190
0016            READ 22,MENU                                                     00000200
0017          22 FORMAT(I1)                                                      00000210
0018            READ 23,NCAUS                                                    00000220
0019          23 FORMAT(I1)                                                      00000230
0020            READ 24,MACY                                                     00000240
0021          24 FORMAT(I1)                                                      00000250
0022            READ 25,ITYPE                                                    00000260
0023          25 FORMAT(I1)                                                      00000270
0024            READ 26,TEMP,AREAP,AREAS,ABVOL,TFAREA,TFVOL                      00000280
0025          26 FORMAT(F9.3,1X,F9.3,1X,F9.3,1X,F9.3,1X,F9.3,1X,F9.3)            00000290
0026            READ 27,MLSS,YN,R1,R2,R3,R4                                      00000300
0027          27 FORMAT(F9.3,1X,F9.3,1X,F9.3,1X,F9.3,1X,F9.3,1X,F9.3)            00000310
0028            READ 28,K20,NN                                                   00000320
0029          28 FORMAT(F9.3,1X,F9.3)                                            00000330
0030          29 PRINT 30,AREA                                                   00000340
0031          30 FORMAT('0','CLARIFIER AREA IN ACRES IS ',F6.3)                  00000350
0032            DO 40 I=1,NS                                                     00000360
0033            XLOG=C(I,1)                                                      00000370
0034          40 C(I,1)=10.**(-XLOG)                                             00000380
0035            DO 50 I=1,NS                                                     00000390
0036            DO 50 J=1,NP                                                     00000400
0037          50 P(I,J)=C(I,J)*FLOW(I)                                           00000410
0038            DO 80 I=1,NB                                                     00000420
0039            EFF(I)=0.0                                                       00000430
0040            DO 80 J=1,NS                                                     00000440
0041            IF(FLOW(J).NE.0.)GO TO 70                                        00000450
0042            PRINT60,J                                                        00000460
0043          60 FORMAT('0','FURTHER COMPUTATION IMPOSSIBLE AS FLOW ',I2,' IS 0') 00000470
0044            TEST=1.                                                          00000480
0045            RETURN                                                           00000490
0046          70 IF(A(J,I).GE.1)R=1.                                             00000500
0047            IF(A(J,I).EQ.0)R=0.                                              00000510
0048          80 EFF(I)=EFF(I)+R*FLOW(J)                                         00000520
0049            NAC=0                                                            00000530
0050            NALK=0                                                           00000540
0051            XK1=4.446E-07                                                    00000550
0052            XK2=4.688E-11                                                    00000560
0053            DO 90 M=1,NP                                                     00000570
0054            IF(NPLIST(M).EQ.22)NALK=M                                        00000580
```

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0055          90 IF(NPLIST(M).EQ.24)NAC=M                                                00000590
0056             IF(NALK.NE.0.AND.NAC.NE.0)GO TO 110                                     00000600
0057             PRINT100                                                                00000610
0058         100 FORMAT('0','ALKALINITY AND ACIDITY HAS TO BE IN NPLIST,#22 AND #2400000620
                1.')                                                                     00000630
0059             TEST=1.                                                                 00000640
0060             RETURN                                                                  00000650
0061         110 DO 350 I=1,NB                                                           00000660
0062             CT=0.                                                                   00000670
0063             NKNT=0                                                                  00000680
0064             DO 120 M=1,NP                                                           00000690
0065         120 NTB(M)=0                                                                00000700
0066             DO 230 J=1,NS                                                           00000710
0067             IF(A(J,I).EQ.0)GO TO 230                                                00000720
0068             IF(I.GT.1)GO TO 180                                                     00000730
0069         130 DO 170 K=1,NP                                                           00000740
0070         170 X(I,K)=X(I,K)+P(J,K)                                                    00000750
0071             HPLUS=P(J,1)/FLOW(J)                                                    00000760
0072             ALFA1=1./(HPLUS/XK1+1.+XK2/HPLUS)                                       00000770
0073             ALFA2=1./(HPLUS**2/(XK1*XK2)+HPLUS/XK2+1.)                              00000780
0074             ALFAZ=1./(1.+XK1/HPLUS+XK1*XK2/(HPLUS**2))                              00000790
0075             IF(P(J,NALK).EQ.0)GO TO 140                                             00000800
0076             CT1=(P(J,NALK)/50000.+(HPLUS-1.0E-14/HPLUS)*FLOW(J))/(ALFA1+2.*        00000810
                1ALFA2)                                                                  00000820
0077             CT=CT+CT1                                                               00000830
0078             X(I,NAC)=X(I,NAC)+2.*CT1*50000.-P(J,NALK)                               00000840
0079             GO TO 230                                                               00000850
0080         140 IF(P(J,NAC).EQ.0.)GO TO 150                                             00000860
0081             CT1=(P(J,NAC)/50000.+(-HPLUS+1.0E-14/HPLUS)*FLOW(J))/(ALFA1+2.*        00000870
                1ALFAZ)                                                                  00000880
0082             CT=CT+CT1                                                               00000890
0083             X(I,NALK)=X(I,NALK)+2.*CT1*50000.-P(J,NAC)                              00000900
0084             GO TO 230                                                               00000910
0085         150 PRINT160,I,J                                                            00000920
0086         160 FORMAT('0',' FOR BRANCH ',I2,' AND SOURCE ',I2,' BOTH P(J,NALK)         00000930
                1& P(J,NAC)IS 0, YOU MUST ENTER ONE OR THE OTHER NONZERO.')              00000940
0087             GO TO 230                                                               00000950
0088         180 II=I-1                                                                  00000960
0089             DO 190 K=1,II                                                           00000970
0090             L=I-K                                                                   00000980
0091             IF(A(J,L).NE.0)GO TO 200                                                00000990
0092         190 CONTINUE                                                                00001000
0093             GO TO 130                                                               00001010
0094         200 DO 210 K=1,II                                                           00001020
0095             IF(L.EQ.NTB(K))GO TO 230                                                00001030
0096         210 CONTINUE                                                                00001040
0097             NKNT=NKNT+1                                                             00001050
0098             NTB(NKNT)=L                                                             00001060
0099             DO 220 K=1,NP                                                           00001070
0100         220 X(I,K)=X(I,K)+X(L,K)                                                    00001080
0101             CT1=(X(L,NALK)+X(L,NAC))/(2.*50000.)                                    00001090
0102             CT=CT+CT1                                                               00001100
0103         230 CONTINUE                                                                00001110
0104             HPLUS=X(I,1)/EFF(I)                                                     00001120
0105             ALK=X(I,NALK)/(50000.*EFF(I))                                           00001130
0106             CT=CT/EFF(I)                                                            00001140
0107             ALK1=CT*((XK1*HPLUS+2.*XK1*XK2)/(HPLUS**2+XK1*HPLUS+XK1*XK2))+(1.000001150
                1E-14-HPLUS**2)/HPLUS                                                    00001160
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0108              DALK=ABS(ALK-ALK1)                                                    00001170
0109              IF(DALK.LT..00001)GO TO 260                                           00001180
0110              IF(ALK1.LT.ALK)GO TO 250                                              00001190
0111          240 HPLUS=HPLUS*1.25992                                                   00001200
0112              ALK1=CT*((XK1*HPLUS+2.*XK1*XK2)/(HPLUS**2+XK1*HPLUS+XK1*XK2))+(1.000001210
                 1E-14-HPLUS**2)/HPLUS                                                 00001220
0113              DALK=ABS(ALK1-ALK)                                                    00001230
0114              IF(DALK.LT..00001)GO TO 260                                           00001240
0115              IF(ALK1.LE.ALK)GO TO 260                                              00001250
0116              GO TO 240                                                             00001260
0117          250 HPLUS=HPLUS*.794328                                                   00001270
0118              ALK1=CT*((XK1*HPLUS+2.*XK1*XK2)/(HPLUS**2+XK1*HPLUS+XK1*XK2))+(1.000001280
                 1E-14-HPLUS**2)/HPLUS                                                 00001290
0119              DALK=ABS(ALK1-ALK)                                                    00001300
0120              IF(DALK.LT..00001)GO TO 260                                           00001310
0121              IF(ALK1.GE.ALK)GO TO 260                                              00001320
0122              GO TO 250                                                             00001330
0123          260 X(I,1)=HPLUS*EFF(I)                                                   00001340
0124          265 DO 270 J=1,NS                                                         00001350
0125              IF(A(J,I).GE.2)GO TO 280                                              00001360
0126          270 CONTINUE                                                            00001370
0127              GO TO 350                                                             00001380
0128          280 DO 290 K=1,NP                                                         00001390
0129          290 PT(K)=X(I,K)                                                        00001400
0130              EFFT=EFF(I)                                                           00001410
0131              IF(A(J,I).EQ.2)GO TO 300                                              00001420
0132              IF(A(J,I).EQ.3)GO TO 310                                              00001430
0133              IF(A(J,I).EQ.4)GO TO 320                                              00001440
0134          300 CALL NEUTRA(NPLIST,MPARM,PT,NALK,NAC,EFFT,MNEUT,MENU,NCAUS,MACY)      00001450
0135              GO TO 330                                                             00001460
0136          310 CALL SETTLE(AREA,NPLIST,EFFT,MPARM,PT)                              00001470
0137              GO TO 330                                                             00001480
0138          320 CALL DOME(NPLIST,PT,EFFT,ITYPE,TEMP,AREAP,AREAS,ABVOL,MLSS,R1,YN,   00001490
                 1TFVOL,TFAREA,K20,NN,R2,R3,R4,MPARM)                                  00001500
0139          330 DO 340 K=1,NP                                                         00001510
0140          340 X(I,K)=PT(K)                                                        00001520
0141          350 CONTINUE                                                            00001530
0142              DO 400 I=1,NB                                                         00001540
0143              DO 400 J=1,NP                                                         00001550
0144              IF(EFF(I).EQ.0.)Y(I,J)=0.                                             00001560
0145              IF(EFF(I).EQ.0.)GO TO 400                                             00001570
0146              Y(I,J)=X(I,J)/EFF(I)                                                  00001580
0147          400 CONTINUE                                                            00001590
0148              DO 410 I=1,NB                                                         00001600
0149              XLOG=Y(I,1)                                                           00001610
0150              IF(XLOG.EQ.0.)GO TO 410                                               00001620
0151              Y(I,1)=-ALOG10(XLOG)                                                  00001630
0152          410 CONTINUE                                                            00001640
0153              DO 420 I=1,NS                                                         00001650
0154              DO 420 J=1,NB                                                         00001660
0155              IF(A(I,J).GT.1)A(I,J)=1                                               00001670
0156          420 CONTINUE                                                            00001680
0157              NBB=NB                                                                00001690
0158              NPP=NP                                                                00001700
0159              CALL CHK2(Y,NBRNCH,POLN,X,EFF,MSORS,MPARM,MBRNC)                      00001710
0160              CALL FLAG(P,A,C,Y,POLN,NBRNCH,XNAME,RANK,FLGPT,MSORS,MPARM,MBRNC)     00001720
0161              RETURN                                                                00001730
0162              END                                                                   00001740
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0001              SUBROUTINE NEUTRA(NPLIST,MPARM,PT,NALK,NAC,EFFT,MNEUT,MENU,NCAUS,  00000010
                 1MACY)                                                              00000020
0002              DIMENSION NPLIST(MPARM),PT(MPARM)                                  00000030
0003              COMMON/ALPTOP/NSS,NP                                               00000040
0004              INTEGER*2 NPLIST                                                   00000050
0005              REAL NA2CO3,NAOH                                                   00000060
0006              XK1=4.446E-07                                                      00000070
0007              XK2=4.688E-11                                                      00000080
0008              HPLUS=PT(1)/EFFT                                                   00000090
0009              ALFA1=1./(HPLUS/XK1+1.+XK2/HPLUS)                                  00000100
0010              ALFA2=1./(HPLUS**2/(XK1*XK2)+HPLUS/XK2+1.)                         00000110
0011              ALFAZ=1./(1.+XK1/HPLUS+XK1*XK2/(HPLUS**2))                         00000120
0012              IF(MNEUT.EQ.2)GO TO 180                                            00000130
0013              IF(PT(NALK).NE.0)GO TO 101                                         00000140
0014              IF(PT(NAC).NE.0)GO TO 102                                          00000150
0015            101 CTIN=(PT(NALK)/(50000.*EFFT)-1.E-14/HPLUS+HPLUS)/(ALFA1+2.*ALFA2) 00000160
0016              ACYIN=CTIN*(2.*ALFAZ+ALFA1)+HPLUS-1.0E-14/HPLUS                    00000170
0017              GO TO 103                                                          00000180
0018            102 ACYIN=PT(NAC)/(50000.*EFFT)                                      00000190
0019              CTIN=(ACYIN-HPLUS+1.E-14/HPLUS)/(2.*ALFAZ+ALFA1)                   00000200
0020            103 HPLUS=1.0E-07                                                    00000210
0021              ALFAZ=1./(1.+XK1/HPLUS+XK1*XK2/(HPLUS**2))                         00000220
0022              ALFA1=1./(HPLUS/XK1+1.+XK2/HPLUS)                                  00000230
0023              IF(MENU.EQ.1.OR.MENU.EQ.4)GO TO 104                                00000240
0024              IF(MENU.EQ.2.OR.MENU.EQ.3)GO TO 105                                00000250
0025            104 CTOUT=CTIN                                                       00000260
0026              ACYOUT=CTOUT*(2.*ALFAZ+ALFA1)                                      00000270
0027              IF(MENU.EQ.1)GO TO 106                                             00000280
0028              IF(MENU.EQ.4)GO TO 107                                             00000290
0029            105 ACYOUT=ACYIN                                                     00000300
0030              CTOUT=ACYOUT/(2.*ALFAZ+ALFA1)                                      00000310
0031              IF(MENU.EQ.2)GO TO 108                                             00000320
0032              IF(MENU.EQ.3)GO TO 209                                             00000330
0033            106 CAOH2=(ACYIN-ACYOUT)/2.                                          00000340
0034              CA1=1.2*CAOH2                                                      00000350
0035              DO 10 L=1,NP                                                       00000360
0036              IF(NPLIST(L).EQ.12)GO TO 11                                        00000370
0037             10 CONTINUE                                                       00000380
0038              PRINT200                                                           00000390
0039            200 FORMAT('0','NO SO4 SO NO CAOH2 NEUTRA')                          00000400
0040              RETURN                                                             00000410
0041             11 DO 12 M=1,NP                                                     00000420
0042              IF(NPLIST(M).EQ.20)GO TO 13                                        00000430
0043             12 CONTINUE                                                       00000440
0044              PRINT201                                                           00000450
0045            201 FORMAT('0','NO CA SO NO CAOH2 NEUTRA')                           00000460
0046              RETURN                                                             00000470
0047             13 SO4=1.0416E-05*PT(L)/EFFT                                       00000480
0048              CA=CA1+2.5E-05*PT(M)/EFFT                                          00000490
0049              CA2=CAOH2+2.5E-05*PT(M)/EFFT                                       00000500
0050              PT(1)=1.0E-07*EFFT                                                 00000510
0051              PT(NAC)=ACYOUT*EFFT*50000.                                         00000520
0052              PT(NALK)=(2.*CTOUT-ACYOUT)*EFFT*50000.                             00000530
0053              SOLYP=CA2*SO4                                                      00000540
0054              IF(SOLYP.LE.1.32E-04)GO TO 20                                      00000550
0055              B=CA2+SO4                                                          00000560
0056              C=SOLYP-1.32E-04                                                   00000570
0057              CASO4=(B-(SQRT(B**2-4.*C)))/2.                                     00000580
```

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0058              PT(L)=((SO4-CASO4)*96.0E+03)*EFFT                                    00000590
0059              PT(M)=(CA-CASO4)*40000.*EFFT                                         00000600
0060              DO 14 L=1,NP                                                         00000610
0061              IF(NPLIST(L).EQ.6)PT(L)=PT(L)+(CAOH2*74000.-CASO4*136000.)*EFFT      00000620
0062              IF(NPLIST(L).EQ.9)PT(L)=PT(L)+CA1*74000.*EFFT                        00000630
0063              IF(NPLIST(L).EQ.10)PT(L)=PT(L)+(CASO4*136000.+.2*CAOH2*74000.)*EFF00000640
                 1T                                                                   00000650
0064              IF(NPLIST(L).NE.11)GO TO 14                                          00000660
0065              XMG=PT(L)-(CA-CA1)*1.0E+05*EFFT                                      00000670
0066              PT(L)=XMG+(CA-CASO4)*1.0E+05*EFFT                                    00000680
0067           14 CONTINUE                                                           00000690
0068              RETURN                                                            00000700
0069           20 PT(M)=CA*40000.*EFFT                                               00000710
0070              DO 21 L=1,NP                                                      00000720
0071              IF(NPLIST(L).EQ.6)PT(L)=PT(L)+CAOH2*74000.*EFFT                   00000730
0072              IF(NPLIST(L).EQ.9)PT(L)=PT(L)+CA1*74000.*EFFT                     00000740
0073              IF(NPLIST(L).EQ.10)PT(L)=PT(L)+.2*CAOH2*74000.*EFFT               00000750
0074              IF(NPLIST(L).NE.11)GO TO 21                                       00000760
0075              XMG=PT(L)-(CA-CA1)*1.0E+05*EFFT                                   00000770
0076              PT(L)=XMG+PT(M)*2.5                                               00000780
0077           21 CONTINUE                                                          00000790
0078              RETURN                                                            00000800
0079          107 NAOH=ACYIN-ACYOUT                                                 00000810
0080              DO 140 L=1,NP                                                     00000820
0081              IF(NPLIST(L).EQ.6)PT(L)=PT(L)+NAOH*40000.*EFFT                    00000830
0082              IF(NPLIST(L).EQ.9)PT(L)=PT(L)+NAOH*40000.*EFFT                    00000840
0083          140 IF(NPLIST(L).EQ.17)PT(L)=PT(L)+NAOH*23000.*EFFT                   00000850
0084              PT(1)=1.0E-07*EFFT                                                00000860
0085              PT(NAC)=ACYOUT*EFFT*50000.                                        00000870
0086              PT(NALK)=(2.*CTOUT-ACYOUT)*EFFT*50000.                            00000880
0087              RETURN                                                            00000890
0088          108 CACO3=CTOUT-CTIN                                                  00000900
0089              CA1=1.2*CACO3                                                     00000910
0090              DO 109 L=1,NP                                                     00000920
0091              IF(NPLIST(L).EQ.12)GO TO 110                                      00000930
0092          109 CONTINUE                                                          00000940
0093              PRINT202                                                          00000950
0094          202 FORMAT('0','NO SO4 SO NO CACO3 NEUTRA')                           00000960
0095              RETURN                                                            00000970
0096          110 DO 111 LL=1,NP                                                    00000980
0097              IF(NPLIST(LL).EQ.20)GO TO 112                                     00000990
0098          111 CONTINUE                                                          00001000
0099              PRINT203                                                          00001010
0100          203 FORMAT('0','NO CA SO NO CACO3 NEUTRA')                            00001020
0101              RETURN                                                            00001030
0102          112 PT(1)=1.0E-07*EFFT                                                00001040
0103              PT(NAC)=ACYOUT*EFFT*50000.                                        00001050
0104              PT(NALK)=(2.*CTOUT-ACYOUT)*EFFT*50000.                            00001060
0105              SO4=1.0416E-05*PT(L)/EFFT                                         00001070
0106              CA2=CACO3+2.5E-05*PT(LL)/EFFT                                     00001080
0107              SOLYP=CA2*SO4                                                     00001090
0108              IF(SOLYP.LE.1.32E-04)GO TO 113                                    00001100
0109              B=CA2+SO4                                                         00001110
0110              C=CA2*SO4-1.32E-04                                                00001120
0111              CASO4=(B-(SQRT(B**2-4.*C)))/2.                                    00001130
0112              PT(L)=(SO4-CASO4)*96000.*EFFT                                     00001140
0113              PT(LL)=PT(LL)+(CA1-CASO4)*40000.*EFFT                             00001150
0114              DO 114 L=1,NP                                                     00001160
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00061

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0115              IF(NPLIST(L).EQ.6)PT(L)=PT(L)+(CACO3*1.E+05-CASO4*136000.)*EFFT   00001170
0116              IF(NPLIST(L).EQ.9)PT(L)=PT(L)+CA1*1.E+05*EFFT                     00001180
0117              IF(NPLIST(L).EQ.10)PT(L)=PT(L)+(CASO4*136000.+.2*CACO3*1.E+05)*EFF00001190
                 1T                                                                 00001200
0118              IF(NPLIST(L).NE.11)GO TO 114                                      00001210
0119              XMG=PT(L)-(PT(LL)-(CA1-CASO4)*40000.*EFFT*2.5)                    00001220
0120              PT(L)=XMG+PT(LL)*2.5                                              00001230
0121            114 CONTINUE                                                        00001240
0122              RETURN                                                            00001250
0123            113 PT(LL)=PT(LL)+CA1*40000.*EFFT                                   00001260
0124              DO 115 L=1,NP                                                     00001270
0125              IF(NPLIST(L).EQ.6)PT(L)=PT(L)+CACO3*1.E+05*EFFT                   00001280
0126              IF(NPLIST(L).EQ.9)PT(L)=PT(L)+1.2*CACO3*74000.*EFFT               00001290
0127              IF(NPLIST(L).EQ.10)PT(L)=PT(L)+(.2*CACO3*1.E+05)*EFFT             00001300
0128              IF(NPLIST(L).NE.11)GO TO 115                                      00001310
0129              XMG=PT(L)-(PT(LL)-CA1*1.0E+05*EFFT)                               00001320
0130              PT(L)=XMG+PT(LL)*2.5                                              00001330
0131            115 CONTINUE                                                        00001340
0132              RETURN                                                            00001350
0133            209 NA2CO3=CTOUT-CTIN                                               00001360
0134              PT(1)=1.0E-07*EFFT                                                00001370
0135              PT(NAC)=ACYOUT*EFFT*50000.                                        00001380
0136              PT(NALK)=(2.*CTOUT-ACYOUT)*EFFT*50000.                            00001390
0137              DO 116 L=1,NP                                                     00001400
0138              IF(NPLIST(L).EQ.6)PT(L)=PT(L)+NA2CO3*106000.*EFFT                 00001410
0139              IF(NPLIST(L).EQ.9)PT(L)=PT(L)+NA2CO3*106000.*EFFT                 00001420
0140            116 IF(NPLIST(L).EQ.17)PT(L)=PT(L)+2.*NA2CO3*23000.                 00001430
0141              RETURN                                                            00001440
0142            180 IF(PT(NALK).NE.0)GO TO 117                                      00001450
0143              IF(PT(NAC).NE.0)GO TO 118                                         00001460
0144            117 ALKIN=PT(NALK)/(50000.*EFFT)                                    00001470
0145              CTIN=(ALKIN-1.E-14/HPLUS+HPLUS)/(ALFA1+2.*ALFA2)                  00001480
0146              GO TO 121                                                         00001490
0147            118 CTIN=(PT(NAC)/(50000.*EFFT)-HPLUS+1.E-14/HPLUS)/(2.*ALFAZ+ALFA1)00001500
0148              ALKIN=2.*CTIN-PT(NAC)/(50000.*EFFT)                               00001510
0149            121 HPLUS=1.E-07                                                    00001520
0150              ALFA1=1./(HPLUS/XK1+1.+XK2/HPLUS)                                 00001530
0151              ALFA2=1./(HPLUS**2/(XK1*XK2)+HPLUS/XK2+1.)                        00001540
0152              IF(NCAUS.EQ.2)GO TO 127                                           00001550
0153              CTOUT=CTIN                                                        00001560
0154              ALKOUT=CTOUT*(ALFA1+2.*ALFA2)                                     00001570
0155              PT(1)=1.0E-07*EFFT                                                00001580
0156              PT(NALK)=ALKOUT*EFFT*50000.                                       00001590
0157              PT(NAC)=(2.*CTOUT-ALKOUT)*EFFT*50000.                             00001600
0158              IF(MACY.NE.1)GO TO 123                                            00001610
0159              H2SO4=(ALKIN-ALKOUT)/2.                                           00001620
0160              DO 122 L=1,NP                                                     00001630
0161              IF(NPLIST(L).EQ.6)PT(L)=PT(L)+H2SO4*98000.*EFFT                   00001640
0162              IF(NPLIST(L).EQ.9)PT(L)=PT(L)+H2SO4*98000.*EFFT                   00001650
0163            122 IF(NPLIST(L).EQ.12)PT(L)=PT(L)+H2SO4*96000.*EFFT                00001660
0164              RETURN                                                            00001670
0165            123 IF(MACY.NE.2)GO TO 125                                          00001680
0166              HCL=ALKIN-ALKOUT                                                  00001690
0167              DO 124 L=1,NP                                                     00001700
0168              IF(NPLIST(L).EQ.6)PT(L)=PT(L)+HCL*36500.*EFFT                     00001710
0169              IF(NPLIST(L).EQ.9)PT(L)=PT(L)+HCL*36500.*EFFT                     00001720
0170            124 IF(NPLIST(L).EQ.15)PT(L)=PT(L)+HCL*35500.*EFFT                  00001730
0171              RETURN                                                            00001740
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00065

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0172          125 HNO3=ALKIN-ALKOUT                                              00001750
0173              DO 126 L=1,NP                                                  00001760
0174              IF(NPLIST(L).EQ.6)PT(L)=PT(L)+HNO3*63000.*EFFT                 00001770
0175              IF(NPLIST(L).EQ.7)PT(L)=PT(L)+HNO3*62000.*EFFT                 00001780
0176          126 IF(NPLIST(L).EQ.9)PT(L)=PT(L)+HNO3*63000.*EFFT                 00001790
0177              RETURN                                                         00001800
0178          127 ALKOUT=ALKIN                                                   00001810
0179              CTOUT=ALKOUT/(ALFA1+2.*ALFA2)                                  00001820
0180              CO2=CTOUT-CTIN                                                 00001830
0181              PT(1)=1.0E-07*EFFT                                             00001840
0182              PT(NALK)=ALKOUT*EFFT*50000.                                    00001850
0183              PT(NAC)=(2.*CTOUT-ALKOUT)*EFFT*50000.                          00001860
0184              DO 128 L=1,NP                                                  00001870
0185              IF(NPLIST(L).EQ.6)PT(L)=PT(L)+CO2*44000.*EFFT                  00001880
0186          128 IF(NPLIST(L).EQ.9)PT(L)=PT(L)+CO2*44000.*EFFT                  00001890
0187              RETURN                                                         00001900
0188              END                                                            00001910
```

```
0001            SUBROUTINE SETTLE(AREA,NPLIST,EFFT,MPARM,PT)                    00000010
0002            DIMENSION NPLIST(MPARM),PT(MPARM)                               00000020
0003            COMMON/PASS/NP,NB                                               00000030
0004            INTEGER*2 NPLIST                                                00000040
0005            XP=2.7182**(-EFFT/(2780.*AREA))                                 00000050
0006            RF=(1.-.82*XP)/(1.-.00205*XP)                                   00000060
0007            DO 10 K=1,NP                                                    00000070
0008            IF(NPLIST(K).EQ.2)PT(K)=.3*PT(K)+.7*PT(K)*RF                    00000080
0009            IF(NPLIST(K).EQ.4)PT(K)=.3*PT(K)+.7*PT(K)*RF                    00000090
0010            IF(NPLIST(K).EQ.8)GO TO 15                                      00000100
0011            IF(NPLIST(K).EQ.9)GO TO 25                                      00000110
0012            IF(NPLIST(K).EQ.10)PT(K)=PT(K)*RF                               00000120
0013            IF(NPLIST(K).EQ.16)PT(K)=PT(K)*RF                               00000130
0014            IF(NPLIST(K).EQ.23)PT(K)=PT(K)*RF                               00000140
0015            GO TO 10                                                        00000150
0016          15 DO 16 L=1,NP                                                   00000160
0017            IF(NPLIST(L).EQ.5)GO TO 17                                      00000170
0018          16 CONTINUE                                                       00000180
0019            GO TO 10                                                        00000190
0020          17 PT(K)=PT(L)+RF*(PT(K)-PT(L))                                   00000200
0021            GO TO 10                                                        00000210
0022          25 IND=0                                                          00000220
0023            DO 30 L=1,NP                                                    00000230
0024            IF(NPLIST(L).NE.6)GO TO 30                                      00000240
0025            IND=1                                                           00000250
0026            M=L                                                             00000260
0027            GO TO 35                                                        00000270
0028          30 CONTINUE                                                       00000280
0029          35 DO 31 LL=1,NP                                                  00000290
0030            IF(NPLIST(LL).EQ.10.AND.IND.EQ.1)GO TO 36                       00000300
0031            GO TO 37                                                        00000310
0032          36 IND=3                                                          00000320
0033            MM=LL                                                           00000330
0034            GO TO 39                                                        00000340
0035          37 IF(NPLIST(LL).EQ.10.AND.IND.EQ.0)GO TO 38                      00000350
0036            GO TO 31                                                        00000360
0037          38 IND=2                                                          00000370
0038            MM=LL                                                           00000380
0039            GO TO 39                                                        00000390
0040          31 CONTINUE                                                       00000400
0041          39 IF(IND.EQ.0)GO TO 10                                           00000410
0042            IF(IND.EQ.1)PT(K)=PT(M)+RF*(PT(K)-PT(M))                        00000420
0043            IF(IND.EQ.2)PT(K)=PT(K)-PT(MM)+RF*PT(MM)                        00000430
0044            IF(IND.EQ.3)PT(K)=PT(M)+RF*PT(MM)                               00000440
0045          10 CONTINUE                                                       00000450
0046            RETURN                                                          00000460
0047            END                                                             00000470
```

```
0001              SUBROUTINE DOME(NPLIST,PT,FLOW,ITYPE,TEMP,AREAP,AREAS,ABVOL,
                 1  MLSS,R1,YN,TFVOL,TFAREA,K20,NN,R2,R3,R4,MPARM)
0002              COMMON /ALPTOP/NSS,NP
0003              DIMENSION TT(25),PT(MPARM)
0004              INTEGER*2 NPLIST(MPARM)
0005              REAL MLSS,K20,NN,KD,NKR,NKS,K20
0006              DATA TT/25*-1./
0007              DO 2 J=1,NP
0008             2 TT(NPLIST(J))=PT(J)/FLOW
0009              RF=(1.-.82*EXP(-FLOW/(2780.*AREAP)))/
                 1  (1.-.00205*EXP(-FLOW/(2780.*AREAP)))
0010              IF(TT(6) .LT. 0.  .AND.  TT(10) .GE. 0.)TT(6)=TT(9)-TT(10)
0011              IF(TT(6) .GE. 0.  .AND.  TT(10) .LT. 0.)TT(10)=TT(9)-TT(6)
0012              IF(TT(6) .GE. 0.0 .AND. TT(10) .GE. 0.0)TT(9)=TT(6)+TT(10)*RF
0013              TT(8)=TT(5)+(TT(8)-TT(5))*RF
0014              TT(10)=TT(10)*RF
0015              TT(16)=TT(16)*RF
0016              TT(23)=TT(23)*RF
0017              TT(2)=.3*TT(2)+.7*TT(2)*RF
0018              TT(4)=TT(4)*.3+TT(4)*.7*RF
0019              TT(25)=.3*TT(25)+.7*TT(25)*RF
0020              GO TO (3,4),ITYPE
0021             3 R=R4/FLOW
0022              W=TT(25)*FLOW*8.34
0023              F=(1.0+R)/(1.0+0.1*R)**2
0024              E=1.0/(1.0+0.0085*(W/(TFVOL*F))**0.5)
0025              E=E*1.038**(TEMP-20.)
0026              TT(10)=TT(10)+.2*(TT(25)*8.34*FLOW-E*TT(25)*8.34*(FLOW+R4))/
                 1  (8.34*(FLOW+R4))
0027              TT(2)=TT(2)-TT(25)*(1.-E)
0028              TT(4)=TT(4)-TT(25)*(1.-E)
0029              TT(25)=TT(25)*E
0030              D=TFVOL/TFAREA
0031              Q=(FLOW+R4)/TFAREA
0032              K20=K20*1.07**(TEMP-20.)
0033              E=EXP(-K20*D/Q**NN)
0034              TT(7)=TT(7)+TT(5)-TT(5)*E
0035              TT(8)=TT(8)-TT(5)*(1.-E)
0036              TT(5)=TT(5)*E
0037              FLOWR=FLOW+R4-R2
0038              RF=(1.-.82*EXP(-FLOWR/(2780.*AREAS)))/
                 1  (1.-.00205*EXP(-FLOWR/(2780.*AREAS)))
0039              TT(10)=TT(10)*RF
0040              GO TO 5
0041             4 IF(TT(25) .LE. 0.0)GO TO 5
0042              PLI=TT(25)*FLOW/(MLSS*ABVOL)
0043              THETA=1.0/(YN*PLI)
0044              FLOWR=FLOW+R1
0045              BOD=TT(25)-MLSS*ABVOL/(YN*THETA*FLOWR)                    00088
0046              TT(2)=TT(2)-TT(25)+BOD
0047              TT(4)=TT(4)-TT(25)+BOD
0048              TT(25)=BOD
0049              TT(10)=MLSS
0050              SAREA=AREAS*4047.
0051              SSF=TT(10)*FLOWR*3.785/24./SAREA
0052              TT(10)=4.5+8.6*SSF
0053              IF(TT(5) .LE. 0.1)GO TO 40
0054              TEMP1=ABVOL/THETA
```

```
0055              Y=0.05
0056              NKS=1.0
0057              NKR=0.33*1.123**(TEMP-20.)
0058              DT=ABVOL/FLOWR
0059              X21=Y*FLOW*TT(5)*THETA/ABVOL
0060              XLOW=0.
0061              XUP=2.*X21
0062              IX=0
0063           10 S21=.5*TT(5)
0064              SLOW=0.
0065              SUP=TT(5)
0066              IS=0
0067           15 S22=S21+(NKR*S21*X21*DT)/(Y*(NKS+S21))
0068              X22=X21-(NKR*S21*X21*DT)/(NKS+S21)
0069              S17=(S22*FLOWR-TT(5)*FLOW)/R1
0070              X17=X22*FLOWR/R1
0071              DS2=S21-S17
0072              IF(ABS(DS2)-0.01)29,29,22
0073           22 IF(IS-20)24,29,29
0074           24 IF(DS2)27,27,25
0075           25 SLOW=S21
0076              S21=S21+0.5*(SUP-SLOW)
0077              IS=IS+1
0078              GO TO 15
0079           27 SUP=S21
0080              S21=S21-0.5*(SUP-SLOW)
0081              IS=IS+1
0082              GO TO 15
0083           29 X1=FLOWR*X21
0084              X2=FLOWR*X22
0085              X2=(X1-X2)/X21
0086              DX2=TEMP1-X2
0087              IF(ABS(DX2)-0.1)50,50,30
0088           30 IF(X21-0.001)40,40,32
0089           32 IF(IX-20)31,40,40
0090           31 IF(DX2)37,37,35
0091           35 XUP=X21
0092              X21=X21-0.5*(XUP-XLOW)
0093              IX=IX+1
0094              GO TO 10
0095           37 XLOW=X21
0096              X21=X21+0.5*(XUP-XLOW)
0097              IX=IX+1
0098              GO TO 10
0099           50 TT(7)=TT(7)+TT(5)-S21
0100              TT(8)=TT(8)-TT(5)+S21
0101              TT(5)=S21
0102           40 CONTINUE
0103            5 DO 6 J=1,NP
0104            6 PT(J)=TT(NPLIST(J))*FLOW
0105              RETURN
0106              END
```

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FORTRAN IV G LEVEL  21                FLAG                DATE = 76020          13/28/17              PAGE 0001

0001                SUBROUTINE FLAG(P,A,C,Y,POLN,NBRNCH,XNAME,RANK,FLGPT,MSORS,MPARM,
                   1MBRNC)
0002                DIMENSION P(MSORS,MPARM),A(MSORS,MBRNC),C(MSORS,MPARM),Y(MBRNC,MPA
                   1RM),POLN(MPARM,5),NBRNCH(MBRNC,2),XNAME(MSORS),RANK(MPARM),FLGPT(M
                   2PARM)
0003                COMMON/STOPL/NS,NB,NTOP
0004                COMMON/ALPTOP/NSS,NP
0005                INTEGER POLN,A
0006                INTEGER*2 NX(50),NY(50)
0007                DO 5 I=1,NP
0008              5 RANK(I)=0.
0009                READ(1,900)(FLGPT(I),I=1,NP)
0010              900 FORMAT(25F3.2)
0011                WRITE(3,901)
0012              901 FORMAT('1',8X,'PARAMETER  MINIMUM FLAG LEVELS')
0013                DO 15 I=1,NP
0014               15 PRINT 902,(POLN(I,NN),NN=1,5),FLGPT(I)
0015              902 FORMAT(' ',5X,5A4,2X,F3.2)
0016                DO 10 I=1,NP
0017                DO 10 J=1,NS
0018               10 RANK(I)=RANK(I)+P(J,I)
0019                DO 20 J=1,NP
0020                IF(RANK(J).EQ.0.)GO TO 20
0021                DO 20 I=1,NS
0022                TEMP=P(I,J)/RANK(J)
0023                IF(TEMP.LT.FLGPT(J))GO TO 20
0024                DO 40 K=1,NB
0025                IF(A(I,K).NE.0)GO TO 50
0026               40 CONTINUE
0027               50 IF(Y(K,J).GE.0.)Y(K,J)=-Y(K,J)
0028               20 CONTINUE
0029               77 READ(1,903)NF
0030              903 FORMAT(I2)
0031                IF(NF.EQ.0)GO TO 80
0032                DO 60 I=1,NF
0033               60 READ(1,904)NX(I),NY(I)
0034              904 FORMAT(I2,1X,I2)
0035                WRITE(3,905)NF
0036              905 FORMAT('0','THE NUMBER OF FLAGGED POINTS IS ',I2)
0037                DO 90 I=1,NF
0038                NSUB=NX(I)
0039                NSUB1=NY(I)
0040               90 PRINT 906,NX(I),XNAME(NSUB),(POLN(NSUB1,NN),NN=1,5)
0041              906 FORMAT(' ','SOURCE ',I2,' , ',A4,' THE PARAMETER IS ',5A4)
0042                DO 70 I=1,NF
0043                NSUB1=NY(I)
0044                NSUB=NX(I)
0045                DO 71 J=1,NB
0046                IF(A(NSUB,J).EQ.0)GO TO 71
0047               72 IF(Y(J,NSUB1).GE.0.)Y(J,NSUB1)=-Y(J,NSUB1)
0048                GO TO 70
0049               71 CONTINUE
0050               70 CONTINUE
0051               80 CONTINUE
0052                READ 903,NFB
0053                IF(NFB.EQ.0)GO TO 100
0054                PRINT 905,NFB
0055                DO 81 I=1,NFB
```

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0056              READ 904,NX(I),NY(I)
0057              NSUB=NX(I)
0058              NSUB1=NY(I)
0059              PRINT 910,NX(I),(NBRNCH(NSUB,NN),NN=1,2),(POLN(NSUB1,MM),MM=1,5)
0060          910 FORMAT(' ','BRANCH ',I2,' , ',2A4,' THE PARAMETER IS ',5A4)
0061              IF(Y(NSUB,NSUB1).GE.0.)Y(NSUB,NSUB1)=-Y(NSUB,NSUB1)
0062           81 CONTINUE
0063          100 RETURN
0064              END
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FORTRAN IV G LEVEL  21                CHK2              DATE = 76020          13/28/17              PAGE 0001

0001              SUBROUTINE CHK2(Y,NBRNCH,POLN,X,EFF,MSORS,MPARM,MBRNC)
0002              DIMENSION Y(MBRNC,MPARM),NBRNCH(MBRNC,2),POLN(MPARM,5),X(MBRNC,MPA
                 2RM),EFF(MBRNC)
0003              INTEGER POLN
0004              COMMON/TOPLEV/NB,NP
0005              COMMON/NAMEC/ISTOP
0006              NFLG=0
0007              WRITE(3,904)
0008              DO 40 I=1,NB
0009           40 WRITE(3,903)I,(NBRNCH(I,LL),LL=1,2),EFF(I)
0010          903 FORMAT('0',4X,I2,5X,2A4,5X,F10.3)
0011          904 FORMAT('1','BRANCH NO. AND NAME         FLOW')
0012              WRITE(3,2)
0013        2     FORMAT('1','OUTPUT POLLUTANT DATA MATRIX FROM TOP SUBROUTINE')
0014              WRITE(3,1) NB,NP
0015        1     FORMAT(' ',5X,'NUMBER OF BRANCHES=',I3,5X,'NUMBER OF PARAMETERS=',
                 1I3,/)
0016           55 I=1
0017              NNP=NP
0018              IND=0
0019              IF(NP.GT.6)GO TO 30
0020           33 WRITE(3,900)((POLN(J,K),K=1,5),J=I,NNP)
0021              WRITE(3,901)
0022              DO 20 J=1,NB
0023           20 WRITE(3,902)J,(NBRNCH(J,LL),LL=1,2),(Y(J,K),K=I,NNP)
0024          901 FORMAT(' ',' ELEMENT')
0025          900 FORMAT('0',2X,'PARAMETER ',6(5A4))
0026          902 FORMAT('0',I2,1X,2A4,6(F12.3, 8X))
0027              IF(IND.NE.0)GO TO 31
0028              GO TO 5
0029           30 IF(IND.EQ.0)I=1
0030              IF(IND.EQ.0)NNP=6
0031              IF(IND.GT.0)GO TO 32
0032              IND=IND+1
0033              GO TO 33
0034           32 I=NNP+1
0035              MAT=NNP+6
0036              IF(MAT.GT.NP)NNP=NP
0037              IF(MAT.GT.NP)GO TO 33
0038              NNP=MAT
0039              GO TO 33
0040           31 IF(NNP.EQ.NP)GO TO 5
0041              GO TO 30
0042            5 CONTINUE
0043              IF(NFLG.EQ.1)GO TO 60
0044              WRITE(3,905)
0045          905 FORMAT('1','MASS OUTPUT INFORMATION, POUNDS PER DAY ')
0046              DO 50 I=1,NB
0047              DO 50 J=1,NP
0048              IF(Y(I,J).LT.0.)X(I,J)=-X(I,J)                              03073
0049           50 Y(I,J)=X(I,J)*8.3454
0050              NFLG=1
0051              GO TO 55
0052           60 DO 61 I=1,NB
0053              DO 61 J=1,NP
0054              IF(EFF(I).EQ.0.)Y(I,J)=0.
0055              IF(EFF(I).EQ.0.)GO TO 61
0056              Y(I,J)=Y(I,J)/(EFF(I)*8.3454)
```

```
0057            61 CONTINUE
0058               DO 80 I=1,NB
0059               IF(Y(I,1).EQ.0.)GO TO 80
0060               XSUB=Y(I,1)
0061               IF(Y(I,1).LT.0.)XSUB=-XSUB
0062               IF(Y(I,1).LT.0.)GO TO 81
0063               Y(I,1)=-ALOG10(XSUB)
0064               GO TO 80
0065            81 Y(I,1)=ALOG10(XSUB)
0066            80 CONTINUE
0067               RETURN
0068               END
```

```
0001              SUBROUTINE CORRCT (NPLIST,C,EFF,X,FLOW,A,P,Y,                    00000010
                 1POLN,MSORS,MPARM,MBRNC)                                          00000020
0002              IMPLICIT INTEGER*2(I)                                            00000040
0003              INTEGER*2  MESUR(25) , BPLIST(25,20) , ATSCAN , UN , NUNPR ,     00000050
                 $  NUN , COUNT , COUNT1 , UNIQ(25) , FLAG , UNDET , K , KK ,     00000060
                 $  NUNIQ(25) , NSORSC(25) , NNOTD(25) , ATUNIQ(25) , NPLIST(25)  00000070
0004              INTEGER A,UNK                                                    00000080
0005              DIMENSION   ICONS(25),YM(25,25),C(MSORS,MPARM),POLN(MPARM,5),FLOW 00000090
                 1(MSORS),X(MBRNC,MPARM),EFF(MBRNC),A(MSORS,MBRNC),Y(MBRNC,MPARM), 00000100
                 3CM(25,25),FLOWM(25),ICONS1(25),NUNK(25)                         00000110
0006              COMMON/STOPL/NS,NB,NTOP                                          00000120
0007              COMMON/ALPTOP/NSS,NP                                             00000130
0008              PRINT5,NB,NS,NP                                                  00000140
0009            5 FORMAT('0','NB= ',I2,'  NS= ',I2,'  NP= ',I2)                    00000150
0010              READ(1,1)  (MESUR(I),I=1,NB)                                     00000160
0011            1 FORMAT(80I1)                                                     00000170
0012              DO 2  IB = 1,NB                                                  00000180
0013              IF(MESUR(IB).EQ.0)  GO TO 2                                      00000190
0014              READ(1,3)  (BPLIST(IB,N),N=1,20)                                 00000200
0015            3 FORMAT(20I2)                                                     00000210
0016              IBPLST=BPLIST(IB,1)                                              00000220
0017              READ(1,4)  (YM(IB,N),N=1,IBPLST)                                 00000230
0018            4 FORMAT(F20.6)                                                    00000240
0019            2 CONTINUE                                                       00000250
0020              UN = 0                                                           00000260
0021              NUN = 0                                                          00000270
                C                                                                00000280
0022              DO 100 I=1,NB                                                    00000290
0023              IF(MESUR(I).EQ.0)  GO TO 100                                     00000300
0024              IF(UN.EQ.NS)GO TO 1400                                           00000310
                C         DETERMINE CONTRIBUTING SOURCES TO THE BRANCH            00000320
0025              IFLAG=0                                                          00000330
0026              IC = 0                                                           00000340
0027              DO 10  J=1,NS                                                    00000350
0028              IF(A(J,I).EQ.0)  GO TO 10                                        00000360
0029              IC = IC + 1                                                      00000370
0030              ICONS(IC) = J                                                    00000380
0031              IF(IFLAG.EQ.10) GO TO 10                                         00000390
0032              II=I+1                                                           00000400
0033              DO 1200  K=1,I                                                   00000410
0034              L=II-K                                                           00000420
0035              IF(A(J,L).GT.1) GO TO 1205                                       00000430
0036           1200 CONTINUE                                                       00000440
0037              GO TO 10                                                         00000450
0038           1205 IFLAG=10                                                       00000460
0039             10 CONTINUE                                                       00000470
                C                                                                00000480
0040              IF(IC.EQ.1)  GO TO 11                                            00000490
                C         MORE THAN ONE SOURCE AND MEASUREMENT AT THE BRANCH      00000500
0041              COUNT = 0                                                        00000510
0042              IF(UN.EQ.0)  GO TO 100                                           00000520
0043              DO 19  IN = 1,UN                                                 00000530
0044              DO 19  ICC = 1,IC                                                00000540
0045              IF(ICONS(ICC).NE.UNIQ(IN))  GO TO 19                             00000550
0046              COUNT = COUNT + 1                                                00000560
0047             19 CONTINUE                                                       00000570
0048              IF((IC-COUNT).EQ.1)  GO TO 15                                    00000580
0049              IF((IC-COUNT).EQ.0)  GO TO 100                                   00000590
```

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                C                                                                   00000600
0050                  GO TO 100                                                     00000610
0051               11 CONTINUE                                                      00000620
                C   ONE SOURCE CONTRIBUTING                                        00000630
0052                  FLAG = 0                                                      00000640
0053                  IF(UN.EQ.0)  GO TO 21                                         00000650
0054                  DO 22  IN = 1,UN                                              00000660
0055               22 IF(ICONS(IC).EQ.UNIQ(IN))  FLAG = 10                          00000670
0056                  IF(FLAG.EQ.10)  GO TO 100                                     00000680
0057               21 MESUR(I)=2                                                    00000690
0058                  UN = UN + 1                                                   00000700
0059                  UNIQ(UN) = ICONS(IC)                                          00000710
0060                  IBPLST = BPLIST(I,1)                                          00000720
0061                  DO 30 IP = 1,IBPLST                                           00000730
0062                  IF(IP.NE.1)  GO TO 31                                         00000740
0063                  F = FLOW(ICONS(IC))                                           00000750
0064                  FLOWM(ICONS(IC)) = YM(I,IP)                                   00000760
0065                  WRITE(3,300)ICONS(IC),I,BPLIST(I,1)                           00000770
0066               300 FORMAT(////'  SOURCE NUMBER ',I4,'   IS UNIQUELY DETERMINED ON  00000780
                     $ BRANCH ',I4,'   WHERE ',I4,'   PARAMETERS WERE MEASURED. ',/)  00000790
0067                  WRITE(3,306)  F , YM(I,IP)                                    00000800
0068               306 FORMAT(20X,'  FLOW ',10X,' MODEL ',F20.6,'  MODIFIED TO ',    00000810
                     $ F20.6,/)                                                     00000820
0069                  GO TO 30                                                      00000830
0070               31 DO 32 KK=1,NP                                                 00000840
0071               32 IF(BPLIST(I,IP).EQ.NPLIST(KK))  K = KK                        00000850
0072                  IF(IFLAG.EQ.10) GO TO 1210                                    00000860
0073                  CM(ICONS(IC),K)=YM(I,IP)                                      00000870
0074                  WRITE(3,307)  (POLN(K,III),III=1,5) , YM(I,IP),Y(I,K),YM(I,IP)  00000880
0075               307 FORMAT(10X,5A4,2X,'  MEASURED ',F20.6,10X,'  CALCULATED ',F20.6,/,00000890
                     $     20X,' SOURCE CORRECTED TO ',F20.6,/)                    00000900
0076                  GO TO 30                                                      00000910
0077               1210 PER=C(ICONS(IC),K)*FLOW(ICONS(IC))/X(I,K)                   00000920
0078                  PMCS=YM(I,IP)*YM(I,1)*PER                                     00000930
0079                  CCS=PMCS/YM(I,1)                                              00000940
0080                  CM(ICONS(IC),K)=CCS                                           00000950
0081                  WRITE(3,307)  (POLN(K,III),III=1,5) , YM(I,IP),Y(I,K),CCS     00000960
0082               30 CONTINUE                                                      00000970
0083                  GO TO 100                                                     00000980
                C   UNIQUE WITH MORE THAN ONE SOURCE CONTRIBUTING TO BRANCH MEASURE 00000990
0084               15 CONTINUE                                                      00001000
0085                  DO 40  ICC = 1,IC                                             00001010
0086                  DO 41  IN = 1,UN                                              00001020
0087                  IF(ICONS(ICC).EQ.UNIQ(IN))  GO TO 40                          00001030
0088               41 CONTINUE                                                      00001040
0089                  GO TO 46                                                      00001050
0090               40 CONTINUE                                                      00001060
0091               46 UNDET = ICONS(ICC)                                            00001070
0092                  UN = UN + 1                                                   00001080
0093                  UNIQ(UN) = UNDET                                              00001090
0094                  MESUR(I)=2                                                    00001100
0095                  IBPLST = BPLIST(I,1)                                          00001110
0096                  DO 50 IP = 1,IBPLST                                           00001120
0097                  IF(IP.NE.1)  GO TO 51                                         00001130
0098                  FM = YM(I,1)                                                  00001140
0099                  DO 52 ICC = 1,IC                                              00001150
0100                  IF(UNDET.EQ.ICONS(ICC))  GO TO 52                             00001160
0101                  FM = FM - FLOWM(ICONS(ICC))                                   00001170
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0102          52 CONTINUE                                                        00001180
0103             FLOWM(UNDET) = FM                                               00001190
0104             WRITE(3,318)  UNDET , I , BPLIST(I,1)                           00001200
0105          318 FORMAT(////'   SOURCE NUMBER ',I4,'  IS UNIQUELY DETERMINED ON  00001210
                $ BRANCH ',I4,'   WHERE ',I4,'   PARAMETERS WERE MEASURED. ',/,   00001220
                $   '    OTHER SOURCE(S)  ALSO CONTRIBUTE TO THIS BRANCH'    ,   00001230
                $  ' AS INDICATED.  ',/)                                         00001240
0106             DO 53  ICC = 1,IC                                               00001250
0107             IF(UNDET.EQ.ICONS(ICC))  GO TO 53                               00001260
0108             PER = FLOWM(ICONS(ICC)) / YM(I,1) * 100.0                       00001270
0109             WRITE(3,331)  ICONS(ICC) , FLOWM(ICONS(ICC)) , PER              00001280
0110          331 FORMAT('   SOURCE NUMBER ',I4,'       FLOW RATE ',F20.6,       00001290
                $  '   PERCENT CONTRIBUTION  ',F10.3)                           00001300
0111           53 CONTINUE                                                       00001310
0112             PER = FM / YM(I,1) * 100.0                                      00001320
0113             WRITE(3,332)  UNDET , FM , PER                                  00001330
0114          332 FORMAT(////' FLOW RATE OF SOURCE ',I4,' IS MODIFIED TO ',F20.6,' A00001340
                $ PERCENT CONTRIBUTION OF',F10.3,//,'OTHER PARAMETERS FOLLOW.')  00001350
0115             GO TO 50                                                        00001360
0116           51 DO 54  KK=1,NP                                                 00001370
0117           54 IF(BPLIST(I,IP).EQ.NPLIST(KK))  K = KK                         00001380
0118             XE = 0.0                                                        00001390
0119             DO 55  ICC = 1,IC                                               00001400
0120             IF(UNDET.EQ.ICONS(ICC))  GO TO 55                               00001410
0121             PP = CM(ICONS(ICC),K) * FLOWM(ICONS(ICC))                       00001420
0122             XE = XE + PP                                                    00001430
0123           55 CONTINUE                                                       00001440
0124             PMCS = YM(I,IP) * YM(I,1) - XE                                  00001450
0125             CCS=PMCS/FLOWM(UNDET)                                           00001460
0126             CM(UNDET,K) = CCS                                               00001470
0127             WRITE(3,307)(POLN(K,III),III=1,5),YM(I,IP),Y(I,K),CCS           00001480
0128           50 CONTINUE                                                       00001490
0129          100 CONTINUE                                                       00001500
0130             IF(UN.EQ.NS)GO TO 1400                                          00001510
0131             DO 700 J=1,NS                                                   00001520
0132             DO 710 IN=1,UN                                                  00001530
0133             IF(J.EQ.UNIQ(IN))GO TO 700                                      00001540
0134          710 CONTINUE                                                       00001550
0135             IFLAG=0                                                         00001555
0136             DO 715 I=1,NB                                                   00001560
0137             IF(A(J,I).EQ.0)GO TO 715                                        00001570
0138             GO TO 720                                                       00001580
0139          715 CONTINUE                                                       00001590
0140          720 IF(MESUR(I).NE.1)GO TO 700                                     00001600
0141             IF(A(J,I).GT.1)IFLAG=10                                         00001610
0142             IC1=0                                                           00001620
0143             IC=0                                                            00001630
0144             DO 725 JJ=1,NS                                                  00001640
0145             IF(A(JJ,I).EQ.0)GO TO 725                                       00001650
0146             IC=IC+1                                                         00001660
0147             ICONS(IC)=JJ                                                    00001670
0148          725 CONTINUE                                                       00001680
0149             II=I-1                                                          00001690
0150             IF(MESUR(II).EQ.0)GO TO 700                                     00001700
0151             DO 730 JJ=1,NS                                                  00001710
0152             IF(A(JJ,II).EQ.0)GO TO 730                                      00001720
0153             IC1=IC1+1                                                       00001730
0154             ICONS1(IC1)=JJ                                                  00001740
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0155          730 CONTINUE                                                          00001750
0156              MDIF=IC-IC1                                                       00001760
0157              IDIF=IABS(MDIF)                                                   00001765
0158              IF(IDIF.NE.1)GO TO 700                                            00001770
0159              UNK=0                                                             00001780
0160              DO 735 ICC=1,IC                                                   00001790
0161              DO 740 ICC1=1,IC1                                                 00001800
0162              IF(ICONS(ICC).EQ.ICONS1(ICC1))GO TO 735                           00001810
0163          740 CONTINUE                                                          00001820
0164              UNK=UNK+1                                                         00001830
0165              NUNK(UNK)=ICONS(ICC)                                              00001840
0166          735 CONTINUE                                                          00001850
0167              IF(UNK.GT.1)GO TO 700                                             00001860
0168              IF(NUNK(UNK).NE.J)GO TO 700                                       00001870
0169              MESUR(I)=2                                                        00001880
0170              UN=UN+1                                                           00001890
0171              UNIQ(UN)=J                                                        00001900
0172              IF(BPLIST(I,1).NE.BPLIST(II,1))GO TO 700                          00001910
0173              IBPLST=BPLIST(I,1)                                                00001920
0174              DO 745 IP=1,IBPLST                                                00001930
0175              IF(IP.NE.1)GO TO 750                                              00001940
0176              FM=YM(I,1)-YM(II,1)                                               00001950
0177              WRITE(3,760)J,I,II                                                00001960
0178          760 FORMAT(///' SOURCE NUMBER',I4,' IS UNIQUELY DETERMINED ON BRANCHES00001970
             1',I4,' AND',I4,/)                                                     00001980
0179              WRITE(3,765)J,FLOW(J),FM                                          00001990
0180          765 FORMAT(///' SOURCE NUMBER',I4,' FLOW MODIFIED FROM',F20.6,' TO',  00002000
             1F20.6)                                                                00002010
0181              GO TO 745                                                         00002015
0182          750 CONTINUE                                                          00002020
0183              DO 770 KK=1,NP                                                    00002030
0184          770 IF(BPLIST(I,IP).EQ.NPLIST(KK))K=KK                                00002040
0185              IF(FLAG.EQ.10)GO TO 790                                           00002050
0186              PP=YM(I,IP)*YM(I,1)-YM(II,IP)*YM(II,1)                            00002060
0187              CCS=PP/FM                                                         00002070
0188              WRITE(3,780)(POLN(K,III),III=1,5),C(J,K),CCS                      00002080
0189          780 FORMAT(10X,5A4,2X,'MODEL',F20.6,' CORRECTED TO',F20.6,/)          00002090
0190              GO TO 745                                                         00002100
0191          790 SCON=X(I,K)-X(II,K)                                               00002110
0192              PER=C(J,K)*FLOW(J)/SCON                                           00002120
0193              PMCS=(YM(I,IP)*YM(I,1)-YM(II,IP)*YM(II,1))*PER                    00002130
0194              CCS=PMCS/(YM(I,1)-YM(II,1))                                       00002140
0195              WRITE(3,780)(POLN(K,III),III=1,5),C(J,K),CCS                      00002160
0196          745 CONTINUE                                                          00002175
0197          700 CONTINUE                                                          00002180
0198              IF(UN.EQ.NS)GO TO 1400                                            00002190
              C   THIS PART FOLLOWS AFTER ALL UNIQUELY DETERMINED SOURCES HAVE BEEN  00002200
              C     DETERMINED.                                                     00002210
0199              NUN=0                                                             00002220
0200              DO 500 I=1,NB                                                     00002230
0201              IF(MESUR(I).NE.1)GO TO 500                                        00002240
0202              MESUR(I)=0                                                        00002250
0203              IC=0                                                              00002260
0204              DO 510 J=1,NS                                                     00002270
0205              IF(A(J,I).EQ.0)GO TO 510                                          00002280
0206              IC=IC+1                                                           00002290
0207              ICONS(IC)=J                                                       00002300
0208          510 CONTINUE                                                          00002310
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0209              NUNPR=0                                                        00002320
0210              DO 520 ICC=1,IC                                                00002330
0211              IF(UN.EQ.0)GO TO 505                                           00002340
0212              DO 530 IN=1,UN                                                 00002350
0213              IF(ICONS(ICC).EQ.UNIQ(IN))GO TO 520                            00002360
0214          530 CONTINUE                                                       00002370
0215          505 IF(NUN.EQ.0)GO TO 540                                          00002380
0216              DO 540 NN=1,NUN                                                00002390
0217              IF(ICONS(ICC).EQ.NUNIQ(NN))GO TO 520                           00002400
0218          540 CONTINUE                                                       00002410
0219              NUNPR=NUNPR+1                                                  00002420
0220              NUN=NUN+1                                                      00002430
0221              NUNIQ(NUN)=ICONS(ICC)                                          00002440
0222              NSORSC(NUNPR)=ICONS(ICC)                                       00002450
0223          520 CONTINUE                                                       00002460
0224              IF(NUNPR.EQ.0)GO TO 500                                        00002470
0225              IBPLST=BPLIST(I,1)                                             00002480
0226              DO 560 IP=1,IBPLST                                             00002490
0227              IF(IP.NE.1)GO TO 561                                           00002500
0228              DO 550 JJ=1,NUNPR                                              00002510
0229              PER=FLOW(NSORSC(JJ))/EFF(I)                                    00002520
0230              FLOWM(NSORSC(JJ))=PER*YM(I,IP)                                 00002530
0231              WRITE(3,580)NSORSC(JJ),I,FLOWM(NSORSC(JJ))                     00002540
0232          580 FORMAT(////' FLOW OF SOURCE',I4,' IS ESTIMATED FROM BRANCH',I4,' A00002550
                 $S',F20.6,/)                                                    00002560
0233          550 CONTINUE                                                       00002570
0234              GO TO 560                                                      00002580
0235          561 DO 570 KK=1,NP                                                 00002590
0236              IF(BPLIST(I,IP).EQ.NPLIST(KK))K=KK                             00002600
0237          570 CONTINUE                                                       00002610
0238              DO 565 JJ=1,NUNPR                                              00002620
0239              PER=C(NSORSC(JJ),K)*FLOW(NSORSC(JJ))/X(I,K)                    00002630
0240              PMCS=YM(I,IP)*YM(I,1)*PER                                      00002640
0241              CCS=PMCS/FLOWM(NSORSC(JJ))                                     00002650
0242              CM(NSORSC(JJ),K)=CCS                                           00002660
0243              WRITE(3,585)(POLN(K,III),III=1,5),NSORSC(JJ),I,CCS             00002670
0244          585 FORMAT(10X,5A4,2X,' OF SOURCE',I4,' IS ESTIMATED FROM BRANCH',I4,'00002680
                 $ AS',F20.6,/)                                                  00002690
0245          565 CONTINUE                                                       00002700
0246          560 CONTINUE                                                       00002710
0247              LL=UN+NUN                                                      00002720
0248              IF(LL.EQ.NS)GO TO 1400                                         00002730
0249          500 CONTINUE                                                       00002740
0250         1400 WRITE(3,595)UN                                                 00002750
0251          595 FORMAT(////,I4,' SOURCES HAVE BEEN DETERMINED FROM MEASUREMENTS, 00002760
                 $THEY ARE;')                                                    00002770
0252              IF(UN.EQ.0)GO TO 610                                           00002780
0253              WRITE(3,605)(UNIQ(IN),IN=1,UN)                                 00002790
0254          605 FORMAT(20X,I10)                                                00002800
0255          610 WRITE(3,615)NUN                                                00002810
0256          615 FORMAT(////,1X,I4,' SOURCES HAVE BEEN ESTIMATED FROM MEASUREMENTS,00002820
                 $THEY ARE;')                                                    00002830
0257              IF(NUN.EQ.0)GO TO 620                                          00002840
0258              WRITE(3,630)(NUNIQ(IN),IN=1,NUN)                               00002850
0259          630 FORMAT(20X,I10)                                                00002860
0260          620 CONTINUE                                                       00002870
0261              RETURN                                                         00002880
0262              END                                                            00002890
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0001              SUBROUTINE LEVEL(*,Y,A,P,SOL,MSORS,SUM,SUMA,MPARM,MBRNC,MBRP1,NPLA
                 1)
0002              DIMENSION Y(MBRNC,MPARM),A(MSORS,MBRNC),P(MPARM,25,MBRNC),SOL(51,M
                 1BRP1),SUM(MSORS),SUMA(MSORS),NPLA(25)
0003              COMMON/TOPLEV/NBB,NPP
0004              COMMON/STOPL/NS,NB,NTOP
0005              COMMON/RMATCH/NPOL,NLEV,NPMAX
0006              INTEGER*2 NPLA,SOL
0007              INTEGER A,SUM,SUMA,SOLA(100),TOP(100),SUMRR
0008              NP=NPP
0009              DO 1 J=1,NS
0010              IF(A(J,NB).NE.1) GO TO 2
0011         1    CONTINUE
0012              GO TO 35
0013         2    WRITE(3,4)
0014         4    FORMAT('1','CIRCUIT MATRIX NOT ENTERED CORRECTLY FOR LEVEL SUBROUTI
                 2INE',//,5X,'OUTFALL SHOULD BE DENOTED WITH HIGHEST NUMBER')
0015              RETURN1
0016        35    DO 8 K=1,NS
0017              SUMA(K)=0
0018         8    SUM(K)=0
0019              JJ=0
0020              I=1
0021              M=NB-1
0022         6    TOP(I)=M
0023              K=0
0024              DO 44 J=1,NS
0025              SUM(J)=SUM(J)+A(J,M)
0026              IF(SUM(J).GT.1) GO TO 5
0027              IF(SUM(J).EQ.0) K=1
0028        44    CONTINUE
0029              IF(K.EQ.0) GO TO 7
0030              DO 9 J=1,NS
0031         9    SUMA(J)=SUM(J)
0032              I=I+1
0033              M=M-1
0034              IF(M.LT.1) GO TO 47
0035              GO TO 6
0036         5    DO 10 J=1,NS
0037        10    SUM(J)=SUMA(J)
0038              M=M-1
0039              IF(M.LT.1) GO TO 47
0040              GO TO 6
0041         7    JJ=JJ+1
0042              SOL(JJ,1)=I
0043              DO 12 K=1,I
0044        12    SOL(JJ,K+1)=TOP(K)
0045              IF(JJ.EQ.24)GO TO 20
0046              IF (SOL(JJ,I+1).NE.1) GO TO 5
0047              IF (JJ.EQ.1) GO TO 55
0048              KK=0
0049              LIMT1=I+1
0050              DO 250 J=2,LIMT1
0051              IF(SOL(JJ-1,J).EQ.SOL(JJ,J)) KK=KK+1
0052              IF(SOL(JJ-1,J).NE.SOL(JJ,J)) GO TO 270
0053       250    CONTINUE
0054         270 IF(KK.EQ.0)GO TO 55
0055       271    IR=SOL(JJ,KK+2)-1
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0056              IF (IR.LE.1) GO TO 351
0057              M=IR                                                    FFF
0058              I=KK+1
0059              DO 251 J=2,I
0060         251  TOP(J-1)=SOL(JJ,J)
0061         70   LIMT2=KK
0062         69   DO 252 K=1,NS
0063              SUMA(K)=0
0064         252  SUM(K)=0
0065              DO 253 J=1,LIMT2
0066              NSUB=TOP(J)
0067              DO 254 K=1,NS
0068              SUMA(K)=SUMA(K)+A(K,NSUB)
0069           254 SUM(K)=SUM(K)+A(K,NSUB)
0070         253  CONTINUE
0071              GO TO 6
0072         362  IF(KK.EQ.0) GO TO 300
0073              GO TO 271
0074         351  KK=KK-1
0075              GO TO 362
0076         301  KK=1
0077              GO TO 271
0078         55   DO 255 J=1,I
0079              KK=I+1-J
0080              IF(SOL(JJ,KK+1).GT.J) GO TO 970
0081         255  CONTINUE
0082              GO TO 300
0083         970  IF(KK.EQ.1) GO TO 300
0084              IR=SOL(JJ,KK+1)-1
0085              IF(IR.LE.1) GO TO 651
0086              M=IR
0087              I=KK
0088              DO 671 J=2,KK
0089         671  TOP(J-1)=SOL(JJ,J)
0090              LIMT2=KK-1
0091              GO TO 69
0092         651  KK=KK-1
0093              GO TO 970
0094         47   IF(JJ.GT.0) GO TO 360
0095              WRITE(3,1000)
0096         1000 FORMAT(' ',5X,'TOPOLOGICAL DATA ENTERED INCORRECTLY')
0097              RETURN1
0098         360  LIMB=SOL(JJ,1)+1
0099              KK=0
0100              DO 361 J=2,LIMB
0101              IF(SOL(JJ,J).EQ.TOP(J-1)) KK=KK+1
0102              IF(SOL(JJ,J).NE.TOP(J-1)) GO TO 862
0103         361  CONTINUE
0104              IF(KK.EQ.0) GO TO 855
0105         871  IR=TOP(KK+1)-1                                                    00039
0106              IF(IR.LE.1) GO TO 851
0107              M=IR
0108              I=KK+1
0109              GO TO 70
0110         851  KK=KK-1
0111              GO TO 862
0112         862  IF(KK.EQ.0) GO TO 300
0113              GO TO 871
```

```
0114          855 DO 655 J=1,I
0115              KK=I+1-J
0116              IF(TOP(KK).GT.J)GO TO 670
0117          655 CONTINUE
0118              GO TO 300
0119          670 IF(KK.EQ.1)GO TO 300
0120              IR=TOP(KK)-1
0121              IF(IR.LE.1)GO TO 951
0122              M=IR
0123              I=KK
0124              LIMT2=KK-1
0125              GO TO 69
0126          951 KK=KK-1
0127              GO TO 670
0128         300  LIMA=TOP(1)-1
0129              DO 114 J=1,NS
0130              SUMRR=0
0131              DO 115 K=1,LIMA
0132         115  SUMRR=SUMRR+A(J,K)
0133              IF(SUMRR.EQ.0) GO TO 20
0134         114  CONTINUE
0135              M=TOP(1)-1
0136              I=1
0137              DO 166 K=1,NS
0138              SUMA(K)=0
0139         166  SUM(K)=0
0140              GO TO 6
0141         20   NMAX=SOL(1,1)
0142              DO 25 J=2,JJ
0143              IF(SOL(J,1).GT.NMAX) NMAX=SOL(J,1)
0144         25   CONTINUE
0145              NEMAX=NMAX
0146              LIM2=JJ-1
0147              LIM3=NMAX+1
0148              DO 26 K=1,LIM2
0149              LIM4=K+1
0150              DO 26 L=LIM4,JJ
0151              IF(SOL(L,1).LT.SOL(K,1)) GO TO 27
0152              GO TO 26
0153         27   DO 28 LL=1,LIM3
0154         28   SOLA(LL)=SOL(K,LL)
0155              DO 29 LL=1,LIM3
0156         29   SOL(K,LL)=SOL(L,LL)
0157              DO 30 LL=1,LIM3
0158         30   SOL(L,LL)=SOLA(LL)
0159         26   CONTINUE
0160              IF(NTOP.NE.1) GO TO 33
0161              LIM6=JJ+1
0162              DO 1500 I=1,JJ
0163              LIM7=SOL(JJ+1-I,1)+1
0164              DO 1500 K=1,LIM7
0165         1500 SOL(JJ+2-I,K)=SOL(JJ+1-I,K)
0166              SOL(1,1)=1
0167              SOL(1,2)=NB
0168              GO TO 52
0169         33   LIM6=JJ
0170         52   DO 32 K=1,LIM6
0171              DO 32 KL=1,NP
```

00031

```
0172                LIM5=SOL(K,1)
0173                DO 32 KJ=1,LIM5
0174                NSUB=SOL(K,KJ+1)
0175                P(KL,K,KJ)=Y(NSUB,KL)
0176          32    CONTINUE
0177                DO 1001 K=1,LIM6
0178                LIM5=SOL(K,1)
0179                DO 1001 J=1,LIM5
0180          1001  CONTINUE
0181                NLEV=LIM6
0182                NPMAX=NEMAX
0183                NPOL=NP
0184                DO 100 I=1,NLEV
0185            100 NPLA(I)=SOL(I,1)
0186                RETURN
0187                END
```

```
0001              SUBROUTINE RM(POLN,MENAME,IDO,NMA,NPLA,PC,PCRM,PM,IBN,NALOW,PMD
                 1ATA,NTEMP,NROUT,NFLOW,SMEQTI,SAMFRE,EQUSED,EU,SUMM,NSET,AMAR,TEMP,
                 2EQTIME,NPLIST,USENO,CNSTAR,NBRNCH,BRANCH,BRN,EQNAME,MPARM,MBRNC,MB
                 4RP1,MEQ,MP2,VNSP)
0002              DIMENSION POLN(MPARM,5),MENAME(MPARM,3,5),FP(400,4),IDO(MPARM,25),
                 1NMA(MPARM),NPLA(25),PC(MPARM,25,MBRNC),PCRM(MPARM,3),PM(MPARM,25,3
                 2),IBN(51,MBRP1),NALOW(MPARM,MBRNC),PMDATA(MPARM,3,4,5),SMEQTI(MEQ)
                 4,SAMFRE(MPARM),EQUSED(MPARM,MEQ),EU(MEQ),SUMM(6),NSET(MPARM,3),AMA
                 5R(MPARM,MP2),TEMP(4,2),EQTIME(MEQ),CNSTAR(6),NBRNCH(MBRNC,2),BRANC
                 6H(MBRNC,MPARM),BRN(MBRNC),EQNAME(MEQ,5),NTEMP(MPARM),NPLIST(MPARM)
                 7,USENO(MEQ),VNSP(MEQ),NROUT(MBRNC),NFLOW(MBRNC)
0003              COMMON/RMATCH/NPOL,NL,IDUMMY
0004              COMMON/MAST/MASTER
0005              COMMON/PASS/NP,NB
0006              COMMON/NAMEC/ISTOP
0007              COMMON/NAMED/LENGTH
0008              INTEGER EQUSED,EU,POLN,EQNAME,AMARL,AMARJ,USENO
0009              INTEGER*2 IBN,NTEMP,NPLIST,IDO,NPLA,NALOW,NMA,AMAR,PM,FP
0010              DATA IYES/'YES '/,NO/'NO  '/,IBSP/'    '/                    RM   430
0011              DATA FP/1600*0/
0012              IVIOL=0
                C                                                              RM  1450
                C         READ THE TOPOLOGY OF THE SITE AND PRINT IT           RM  1500
                C                                                              RM  1550
0013              PRINT125                                                     RM  1700
0014            125 FORMAT(/'-THE TOPOLOGY OF THE SITE'/6X,'LEVEL',10X,'# OF TEST POINRM  1750
                   1TS')                                                       RM  1800
0015            101 FORMAT('1')
0016              PRINT130,(I,NPLA(I),I=1,NL)                                  RM  1850
0017            130 FORMAT(7X,I2,19X,I2)                                       RM  1900
                C                                                              RM  1950
                C         READ AND PRINT THE NAMES OF ALL ITEMS OF EQUIPMENT AND THE   RM  2000
                C         EQUIPMENT CONSTRAINTS. THE EQ. IS CODED AS IT IS READ IN, THE RM  2050
                C         1ST EQ. NAME IS CODED 1, 2ND-2,ETC.                  RM  2100
                C                                                              RM  2150
0018              READ135,NPOFEQ                                               RM  2200
0019            135 FORMAT(I3)                                                 RM  2250
0020              PRINT140,NPOFEQ                                              RM  2300
0021            140 FORMAT(/'-TOTAL # OF ITEMS OF EQUIPMENT = ',I3)            RM  2350
0022              READ145,((EQNAME(I,J),J=1,5),EQTIME(I),I=1,NPOFEQ)           RM  2400
0023            145 FORMAT(2(5A4,F10.1,10X))                                   RM  2450
0024              PRINT150                                                     RM  2500
0025            150 FORMAT(6X,'EQ. CODE #',5X,'EQ. NAME',17X,'TOTAL TIME AVAIL./TIME PRM  2550
                   1ERIOD')                                                    RM  2600
0026              PRINT155,(I,(EQNAME(I,J),J=1,5),EQTIME(I),I=1,NPOFEQ)        RM  2650
0027            155 FORMAT(9X,I3, 9X,5A4,19X,F7.1)                             RM  2700
                C                                                              RM  4000
                C         READ & PRINT METHODS & DATA ASSOCIATED WITH EACH METHOD FOR   RM  4050
                C         EACH  PARAMETER                                      RM  4100
                C                                                              RM  4150
0028              N=1                                                                    00033
0029              DO 10 I=1,MASTER
0030              IF(NPLIST(N).EQ.I)NMAI=NMA(N)
0031              IF(NPLIST(N).NE.I)NMAI=NTEMP(I)
0032              DO 20 J=1,NMAI
0033              READ410,(MENAME(N,J,II),II=1,5),PCRM(N,J)
0034              DO 30 L=1,4
0035             30 READ430,(PMDATA(N,J,L,LI),LI=1,5)
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0036          20 CONTINUE
0037             IF(NPLIST(N).EQ.I)N=N+1
0038          10 CONTINUE
0039         410 FORMAT(5X,5A4,F10.5)                                          RM  4600
0040         430 FORMAT(F5.0,F10.2,F10.3,F10.2,F10.3)                          RM  5150
0041             DO 500 I=1,NP                                                 RM  4200
0042             PRINT101                                                      RM  4250
0043             PRINT405,(POLN(I,J),J=1,5),NMA(I)                             RM  4300
0044         405 FORMAT('-PARAMETER NAME  ',5A4,8X,'NUMBER OF METHODS AVAILABLE FORRM  4350
                1 ANALYSIS  ',I1)                                              RM  4400
0045             NMAI=NMA(I)                                                   RM  4450
0046             DO 550 L=1,NMAI                                               RM  4500
0047             PRINT415,L,(MENAME(I,L,II),II=1,5),PCRM(I,L)                  RM  4650
0048         415 FORMAT(/' METHOD ',I1,' NAME',3X,5A4,12X,'MINIMUM ACCEPTABLE CONCERM  4700
                1NTRATION  ',F10.4)                                            RM  4750
0049             PRINT420                                                      RM  4800
0050         420 FORMAT('0',29X,'CODE',6X,'EQ. TIME',23X,'AVG. ANALYSTS')      RM  4850
0051             PRINT425                                                      RM  4900
0052         425 FORMAT(9X,'EQUIPMENT NAME',9X,'#',6X,'PER SAMPLE',6X,'VAN SPACE', RM  4950
                18X,'TIME/SAMPLE',13X,'MISCELLANEOUS')                         RM  5000
0053             DO 600 LL=1,4                                                 RM  5050
0054             IEQN=PMDATA(I,L,LL,1)                                         RM  5200
0055             IF(IEQN.EQ.0) GOTO 575                                        RM  5250
0056             VNSP(IEQN)=PMDATA(I,L,LL,3)                                   RM  5275
0057             PRINT435,(EQNAME(IEQN,JJ),JJ=1,5),IEQN,(PMDATA(I,L,LL,LK),LK=2,5) RM  5300
0058         435 FORMAT('-',5X,5A4,5X,I3,7X,F6.2,10X,F6.2,10X,F6.2,18X,F6.2)   RM  5350
0059             GOTO 590                                                      RM  5400
0060         575 PRINT435,IBSP,IBSP,IBSP,IBSP,IBSP,IEQN,(PMDATA(I,L,LL,LK),LK=2,5) RM  5500
0061         590 IF(LL.EQ.1) PRINT592                                          RM  5550
0062         592 FORMAT('+',80X,'CLASS 1',18X,'COST SAMPLE')                   RM  5600
0063             IF(LL.EQ.2) PRINT594                                          RM  5650
0064         594 FORMAT('+',80X,'CLASS 2',18X,'SET UP TIME')
0065             IF(LL.EQ.3) PRINT596                                          RM  5750
0066         596 FORMAT('+',80X,'CLASS 3',18X,'WHERE ANALYSIS DONE')           RM  5800
0067             IF(LL.EQ.4) PRINT598                                          RM  5850
0068         598 FORMAT('+',80X,'CLASS 4',18X,'TIME CONSTRAINT')               RM  5900
0069         600 CONTINUE                                                      RM  5950
0070             PRINT5010                                                     RM  5975
0071         605 FORMAT(' ')                                                   RM  6050
0072             PRINT605                                                      RM  6000
0073         550 CONTINUE                                                      RM  6100
0074         500 CONTINUE                                                      RM  6150
           C                                                                   RM  6200
           C         COMPARE POINT EXPECTED VALUES WITH MINIMUM FOR EACH METHOD TO RM  6250
           C         DETERMINE WHICH METHODS ARE POSSIBLE FOR ANALYSIS AT EACH  RM  6300
           C         POINT. ALLOCATE RESOURCES TO POINTS WITH "NEG." CONCENTRATIONSRM  6350
           C                                                                   RM  6400
0075            CALL       CONCK(NP,POLN,MENAME,FP,IFPT,IDO,NMA,NFLA,PC,PCRM,PM,IB
                1N,NALOW,PMDATA,SMEQTI,SAMFRE,EQUSED,EU,SUMM,NSET,MPARM,MBRNC,MBRP1
                2,MEQ)
           C                                                                   RM  6500
           C         READ AND PRINT THE CONSTRAINTS ON AVAILABLE RESOURCES     RM  6550
           C                                                                   RM  6600
0076            READ650,(CNSTAR(M),M=1,6)                                     RM  6650
0077         650 FORMAT(4F20.3)                                               RM  6700
0078             PRINT700                                                      RM  6750
0079         700 FORMAT('1'/'0CONSTRAINTS ON AVAILABLE RESOURCES (EXCLUDING EQUIPMERM  6800
                1NT TIME CONSTRAINTS)')                                        RM  6850
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0080            PRINT710,CNSTAR(1)                                              RM  6900
0081          710 FORMAT('0',46X,'CONSTRAINT'/6X,'TOTAL VAN SPACE',25X,F11.3)   RM  6950
0082            DO 750 N=1,4                                                    RM  7000
0083            PRINT720,N,CNSTAR(N+1)                                          RM  7050
0084          720 FORMAT('0',5X,'TOTAL ANALYSTS TIME  (CLASS ',I1,')',10X,F11.3) RM  7100
0085          750 CONTINUE                                                      RM  7150
0086            PRINT760,CNSTAR(6)                                              RM  7200
0087          760 FORMAT('0',5X,'TOTAL COST',28X,'$ ',F10.2)                    RM  7250
0088            LVIOL=0                                                         RM  7260
0089            PRINT800                                                        RM  7275
0090          800 FORMAT('1')                                                   *   7278
              C                                                                 RM  7300
              C       DO RESOURCE ALLOCATION AND CONSTRAINT CHECKS              RM  7350
              C                                                                 RM  7400
0091            DO 1000 I=1,NP                                                  RM  7450
0092            LREM=0                                                          RM  7550
0093            LT=0                                                            RM  7600
              C                                                                 RM  7650
              C       BEGIN HERE FOR DIFFERENT LEVELS                           RM  7700
              C                                                                 RM  7750
0094            DO 2000 J=1,NL                                                  RM  7800
0095            IF(IDO(I,J).EQ.1)GO TO 1000
0096            NPLAJ=NPLA(J)                                                   RM  7850
              C                                                                 RM  7900
              C       MC CORRESPONDS TO THE DIFFERENT METHODS FOR EACH PARAMETER RM  7950
              C                                                                 RM  8000
0097            DO 3000 MC=1,3                                                  RM  8050
0098            L=PM(I,J,MC)                                                    RM  8100
              C                                                                 RM  8150
              C       CHECK TO SEE IF L=0 (IF TRUE,THERE ARE NO OTHER METHODS   RM  8200
              C       POSSIBLE AT LEVEL J; TRY LEVEL J+1).                      RM  8250
              C                                                                 RM  8300
0099            IF(L.EQ.0) GOTO 2000                                            RM  8350
              C                                                                 RM  8400
              C       LREM & JREM KEEPS RECORD OF THE FIRST POSSIBLE METHOD AND THE RM  8450
              C       LEVEL AT WHICH IT OCCURS FOR EACH PARAMETER I             RM  8500
              C                                                                 RM  8550
              C                                                                 RM  8600
0100            IF(LREM.NE.0) GOTO 2050                                         RM  8650
0101            LT=2                                                            RM  8700
0102            LREM=L                                                          RM  8750
0103            JREM=J                                                          RM  8800
0104         2050 AMAR(I,1)=L                                                   RM  8850
0105            LT=LT-1                                                         RM  8900
0106            AMAR(I,2)=J                                                     RM  8950
              C                                                                 RM  9000
              C       CHECK TO SEE IF EQUIPMENT CONSTRAINTS ARE VIOLATED        RM  9050
              C                                                                 RM  9100
0107            CALL TO(TEMP)                                                   RM  9150
0108            CALL EQCHEC(I,J,L,MC,NPLAJ,IVIOL,IEQN,&2200,PC,AMAR,PMDATA,TEMP,SA
               1MFRE,SMEQTI,EQTIME,MPARM,MBRNC,MP2,MEQ)
              C                                                                 RM  9250
              C       EQ. CONSTRAINTS WERE NOT VIOLATED, NOW TRY VAN SPACE CONST. RM  9300
              C                                                                 RM  9350
0109            CALL VSCHEC(I,L,IVIOL,SUM,&2200 ,PMDATA,EU,SUMM,CNSTAR,MPARM,MEQ)
              C                                                                 RM  9450
              C       VAN SPACE O.K., NOW CHECK FOR CONST. VIOLATIONS ON THE 4   RM  9500
              C       DIFFERENT CLASSIFICATIONS OF ANALYSTS                     RM  9550
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                C                                                                       RM  9600
0110                 DO 2100 ICONNO=1,4                                                 RM  9650
0111                 CALL CNCHEC(ICONNO,I,J,L,4,IVIOL,AT,&2200      ,NPLA,NSET,PMDATA,AM
                    1AR,SAMFRE,SUMM,CNSTAR,MPARM,MP2)
0112                2100 CONTINUE                                                       RM  9750
                C                                                                       RM  9800
                C          NOW CHECK FOR COST VIOLATION                                 RM  9850
                C                                                                       RM  9900
                C                                                                       RM 1000
0113                 CALL CNCHEC(1,I,J,L,5,IVIOL,COST,&2200,         NPLA,NSET,PMDATA,AM
                    1AR,SAMFRE,SUMM,CNSTAR,MPARM,MP2)
                C          NO CONSTRAINTS WERE VIOLATED, ALLOCATE THE REQUIRED RESOURCES RM 10050
                C          AND PROCEED TO NEXT PARAMETER                                RM 10100
                C                                                                       RM 10150
0114                 CALL ADD(I,J,L,      NPLA,PC,PMDATA,SMEQTI,SAMFRE,EQUSED,EU,NSET,
                    1MPARM,MBRNC,MEQ,SUMM)
0115                 GOTO 1000                                                          RM 10250
                C                                                                       RM 10300
                C *****    A VIOLATION OF A CONSTRAINT HAS OCCURRED, CONTROL HAS BEEN   RM 10350
                C *****    TRANSFERRED HERE TO RELIEVE THAT VIOLATION                   RM 10400
                C                                                                       RM 10450
0116                2200 IF(LT.NE.1) GOTO 3000                                          RM 10600
0117                 IVIOLR=IVIOL                                                       RM 10650
0118                 IF(IVIOL.EQ.1)IEQNR=IEQN                                           RM 10700
0119                 IF(IVIOL.NE.1)IEQNR=0
                C                                                                       RM 10750
                C          CHECK TO SEE IF THE NEXT AVAILABLE METHOD AT THIS LEVEL      RM 10800
                C          VIOLATES A CONSTRAINT ALSO                                   RM 10850
                C                                                                       RM 10900
0120                3000 CONTINUE                                                       RM 10950
                C                                                                       RM 11000
                C          NO NEW METHOD WAS FOUND AT THE PRESENT LEVEL, NEXT TRY A     RM 11050
                C          HIGHER LEVEL                                                 RM 11100
                C                                                                       RM 11150
0121                2000 CONTINUE                                                       RM 11200
                C                                                                       RM 11250
                C          A VIOLATION OF A CONSTRAINT HAS OCCURRED FOR THE PRESENT     RM 11300
                C          PARAMETER AND THERE IS NO METHOD AT ANY LEVEL WHICH WILL     RM 11350
                C          RELIEVE THE VIOLATION. THE TYPE OF VIOLATION IS IVIOLR WHICH RM 11400
                C          ARE CODED AS FOLLOWS:                                        RM 11450
                C               IVIOLR                                                  RM 11500
                C                 1   - EQUIPMENT VIOLATION (IEQNR IS THE CODE # FOR THE RM 11550
                C                       VIOLATED ITEM).                                 RM 11600
                C                 2   - VAN SPACE VIOLATION                             RM 11650
                C                 3   - TOTAL TIME VIOLATION FOR ANALYST 1              RM 11700
                C                 4   - TOTAL TIME VIOLATION FOR ANALYST 2              RM 11750
                C                 5   - TOTAL TIME VIOLATION FOR ANALYST 3              RM 11800
                C                 6   - TOTAL TIME VIOLATION FOR ANALYST 4              RM 11850
                C                 7   - TOTAL COST VIOLATION                            RM 11900
                C                                                                       RM 11950
                C          PREVIOUS ALLOCATIONS FOR PAST PARAMETERS MUST BE CHECKED, BUT RM 12000
                C          FIRST WE MUST ALLOCATE RESOURCES FOR THE PRESENT PARAMETER.   RM 12050
                C          WE WILL USE THE FIRST FEASIBLE METHOD THAT WAS FOUND. THIS    RM 12100
                C          METHOD IS IDENTFIED BY LREM AND JREM.                        RM 12150
                C                                                                       RM 12200
0122                 CALL SET(I,JREM,LREM,PC,AMAR,NPLA,MPARM,MP2,MBRNC)
0123                 CALL ADD(I,JREM,LREM,NPLA,PC,PMDATA,SMEQTI,SAMFRE,EQUSED,EU,NSET,
                    1MPARM,MBRNC,MEQ,SUMM)
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0124              IF(LVIOL.EQ.1.AND.LEQN.EQ.IEQNR) GO TO 4000
0125              IF(LVIOL.EQ.IVIOLR) GO TO (3200,4100,4200,4200,4200,4200,4300),
                 1IVIOLR
                C                                                              RM 12300
                C          IF AN EQUIPMENT VIOLATION OCCURRED, THEN WE WILL CALL PIEQCH. RM 12350
                C          THIS SUBROUTINE WILL CHECK PREVIOUS PARAMETER ASSIGNMENTS    RM 12400
                C          UNTIL IT FINDS ONE WHICH USED THE VIOLATED EQUIPMENT ITEM,   RM 12450
                C          THEN THE SUBROUTINE WILL SEARCH FOR A NEW METHOD THAT DOES   RM 12500
                C          NOT USE,OR AT LEAST USES LESS OF THE VIOLATED ITEM.          RM 12550
                C                                                              RM 12600
0126            3200  IF(IVIOLR.NE.1) GOTO 3300
0127                  CALL PIEQCH(I,ISTOP,IEQNR,&4000,&1000,IVIOLR,AMAR,PMDATA,PM,NPLA,
                     1TEMP,PC,SMEQTI,SAMFRE,EQUSED,EU,NSET,EQTIME,SUMM,CNSTAR,MPARM,MP2,
                     2MEQ,MBRNC)
                C                                                              RM 12750
                C          IF IVIOLR=2 THEN THE VAN SPACE CONSTRAINT HAS BEEN VIOLATED. RM 12800
                C          THE SUBROUTINE WILL CHECK PREVIOUS ALLOCATIONS AND CHECK TO  RM 12850
                C          SEE IF NEW METHODS OR METHODS AT DIFFERENT LEVELS WILL KEEP  RM 12900
                C          THE TOTAL VAN SPACE WITHIN BOUNDS. THE SUBROUT. PIEQCH CHECKS RM 12950
                C          METHODS AND HIGHER LEVELS BEGINNING WITH THE METHOD AT THE   RM 13000
                C          LEVEL THAT WAS ASSIGNED BEFORE PIEQCH WAS CALLED.            RM 13050
                C                                                              RM 13100
0128             3300 IF(IVIOLR.NE.2) GOTO 3400                                RM 13150
0129                  CALL PIEQCH(I,ISTOP,IEQNR,&4100,&1000,IVIOLR,AMAR,PMDATA,PM,NPLA,
                     1TEMP,PC,SMEQTI,SAMFRE,EQUSED,EU,NSET,EQTIME,SUMM,CNSTAR,MPARM,MP2,
                     2MEQ,MBRNC)
                C          IF IVIOLR IS BETWEEN 3 AND 6, INCLUSIVE, THEN THE VIOLATION  RM 13250
                C          IS ON AN ANALYST'S TIME CONSTRAINT.                          RM 13300
                C                                                              RM 13350
0130             3400 IF(IVIOLR.GT.6) GOTO 3500                                RM 13400
0131                  CALL PIEQCH(I,ISTOP,IEQNR,&4200,&1000,IVIOLR,AMAR,PMDATA,PM,NPLA,
                     1TEMP,PC,SMEQTI,SAMFRE,EQUSED,EU,NSET,EQTIME,SUMM,CNSTAR,MPARM,MP2,
                     2MEQ,MBRNC)
                C                                                              RM 13500
                C          IF IVIOLR EQUALS 7, THEN A COST VIOLATION HAS OCCURRED.      RM 13550
                C                                                              RM 13600
0132             3500 CALL PIEQCH(I,ISTOP,IEQNR,&4300,&1000,IVIOLR,AMAR,PMDATA,PM,NPLA,
                     1TEMP,PC,SMEQTI,SAMFRE,EQUSED,EU,NSET,EQTIME,SUMM,CNSTAR,MPARM,MP2,
                     2MEQ,MBRNC)
                C                                                              RM 13700
                C          THE FOLLOWING SEGMENT IS REACHED ONLY AFTER AN UNSUCCESSFUL  RM 13750
                C          SEARCH HAS BEEN MADE ON ALL PARAMETER ASSIGNMENTS FOLLOWING  RM 13800
                C          A CONSTRAINT VIOLATION                                       RM 13850
                C                                                              RM 13900
0133             4000 PRINT4010,(EQNAME(IEQNR,II),II=1,5),(POLN(I,II),II=1,5)  RM 13950
0134             4010 FORMAT('-AN EQUIPMENT VIOLATION OCCURRED FOR ',5A4,' WHILE METHOD RM 14000
                     1AND LEVEL ASSIGNMENTS WERE BEING CONSIDERED'/' FOR PARAMETER ',  RM 14050
                     25A4,'. VIOLATION NOTED, ASSIGNMENTS CONTINUING.')            RM 14100
0135                  LVIOL=IVIOLR                                             RM 14110
0136                  LEQN=IEQNR                                               RM 14115
0137                  GOTO 1000                                                RM 14125
0138             4100 PRINT4110,(POLN(I,II),II=1,5)                            RM 14150
0139             4110 FORMAT('-A VAN SPACE VIOLATION OCCURRED WHILE METHOD AND LEVEL ASSRM 14200
                     1IGNMENTS WERE  BEING CONSIDERED FOR PARAMETER ',5A4/' VIOLATION NORM 14250
                     2TED, ASSIGNMENTS CONTINUING.')                           RM 14300
0140                  LVIOL=IVIOLR                                             RM 14310
0141                  GOTO 1000                                                RM 14325
0142             4200 IT=IVIOLR-2                                              RM 14350
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0143              PRINT4210,IT,(POLN(I,II),II=1,5)                                  RM 14400
0144           4210 FORMAT('-A VIOLATION ON ANALYSTS TIME CLASSIFICATION ',I1,' OCCURERM 14450
                  1D WHILE METHOD AND LEVEL ASSIGNMENTS WERE BEING CONSIDERED'/' FOR RM 14500
                  2PARAMETER ',5A4,'. VIOLATION NOTED, ASSIGNMENTS CONTINUING.')     RM 14550
0145              LVIOL=IVIOLR                                                      RM 14575
0146              GOTO 1000                                                         RM 14600
0147           4300 PRINT4310,(POLN(I,II),II=1,5)                                   RM 14650
0148           4310 FORMAT('-A COST VIOLATION OCCURRED WHILE METHOD AND LEVEL ASSIGNMERM 14700
                  1NTS WERE BEING CONSIDERED FOR PARAMETER ',5A4/' VIOLATION NOTED. RM 14750
                  2SSIGNMENTS CONTINUING.')                                         RM 14800
0149              LVIOL=IVIOLR                                                      RM 14825
                C                                                                   RM 14850
                C          THE NEXT STATEMENT CLOSES THE PARAMETER ASSIGNMENT LOOP. RM 14900
                C                                                                   RM 14950
0150           1000 CONTINUE                                                        RM 15000
                C                                                                   RM 15050
                C          CONTROL REACHES THIS POINT ONLY AFTER ALL ASSIGNMENTS HAVE RM 15100
                C          BEEN MADE. THE NEXT SEGMENTS DEAL WITH THE OUTPUT. IFPP IS A RM 15150
                C          POINTER FOR THE ARRAY CONTAINING THE FLAGGED POINTS IN THE RM 15200
                C          SITE. TWO PARAMETERS ARE PRINTED ON EACH PAGE.           RM 15250
                C                                                                   RM 15300
0151              CALL       INFORM(AMAR,IBN,NPLA,POLN,FP,IFPT,NBRNCH,BRANCH,BRN,MBR
                  1NC,MPARM,MP2,MBRP1)
0152              CALL       SAMPLE(SAMFRE,SUMM,IFPT,FP,IBN,NBRNCH,BRANCH,MPARM,MBRN
                  1C,MBRP1,NROUT,NFLOW)
0153              IFPP=1                                                            RM 15350
0154              DO 5000 I=1,NP,2                                                  RM 15400
0155              PRINT 101
0156              CALL       PRPAR(IFPT,IFPP,FP,POLN,MENAME,EQNAME,I,AMAR,NPLA,IBN,
                  1PC,SAMFRE,PMDATA,SMEQTI,EQTIME,SUMM,CNSTAR,MPARM,MBRNC,MBRP1,MP2,
                  2MEQ)
0157              PRINT5010                                                         RM 15550
0158           5010 FORMAT(' _____RM 15600
                  1_____RM 15650
                  I________')                                                       RM 15700
0159              IF((I+1).GT.NP)GO TO 5000
0160              CALL     PRPAR(IFPT,IFPP,FP,POLN,MENAME,EQNAME,I+1,AMAR,NPLA,IBN,
                  1PC,SAMFRE,PMDATA,SMEQTI,EQTIME,SUMM,CNSTAR,MPARM,MBRNC,MBRP1,MP2,
                  2MEQ)
0161           5000 CONTINUE                                                        RM 15800
                C                                                                   RM 15850
                C          OUTPUT FOR EQUIPMENT TOTALS                              RM 15900
                C                                                                   RM 15950
0162              PRINT5100                                                         RM 16000
0163           5100 FORMAT('1',5X,'TOTAL ALLOCATIONS FOR THESE ITEMS'/'+',5X,'_____RM 16050
                  1_____'/37X,'# OF PARAMETERS',11X,'TOTAL',12X, RM 16100
                  2'WAS CONSTRAINT', 6X,'AMOUNT OF',10X,'VAN SPACE'/11X,'ITEM',22X, RM 16150
                  3'ITEM IS USED FOR', 10X,'TIME',16X, 'VIOLATED', 9X,'VIOLATION',  RM 16200
                  411X,'REQUIRED')                                                  RM 16250
0164              CALL USECT(EQUSED,NP,NPOFEQ,USENO,MPARM,MEQ)
0165              DO 5200 IQ=1,75                                                   RM 16300
0166              IF( USENO(IQ).EQ.0) GOTO 5200                                     RM 16350
0167              AMV=0.                                                            RM 16400
0168              IND= NO                                                           RM 16450
0169              TIME=SMEQTI(IQ)                                                   RM 16500
0170              IF(TIME.LE.EQTIME(IQ)) GOTO 5300                                  RM 16550
0171              IND=IYES                                                          RM 16600
0172              AMV=SMEQTI(IQ)-EQTIME(IQ)                                         RM 16650
```

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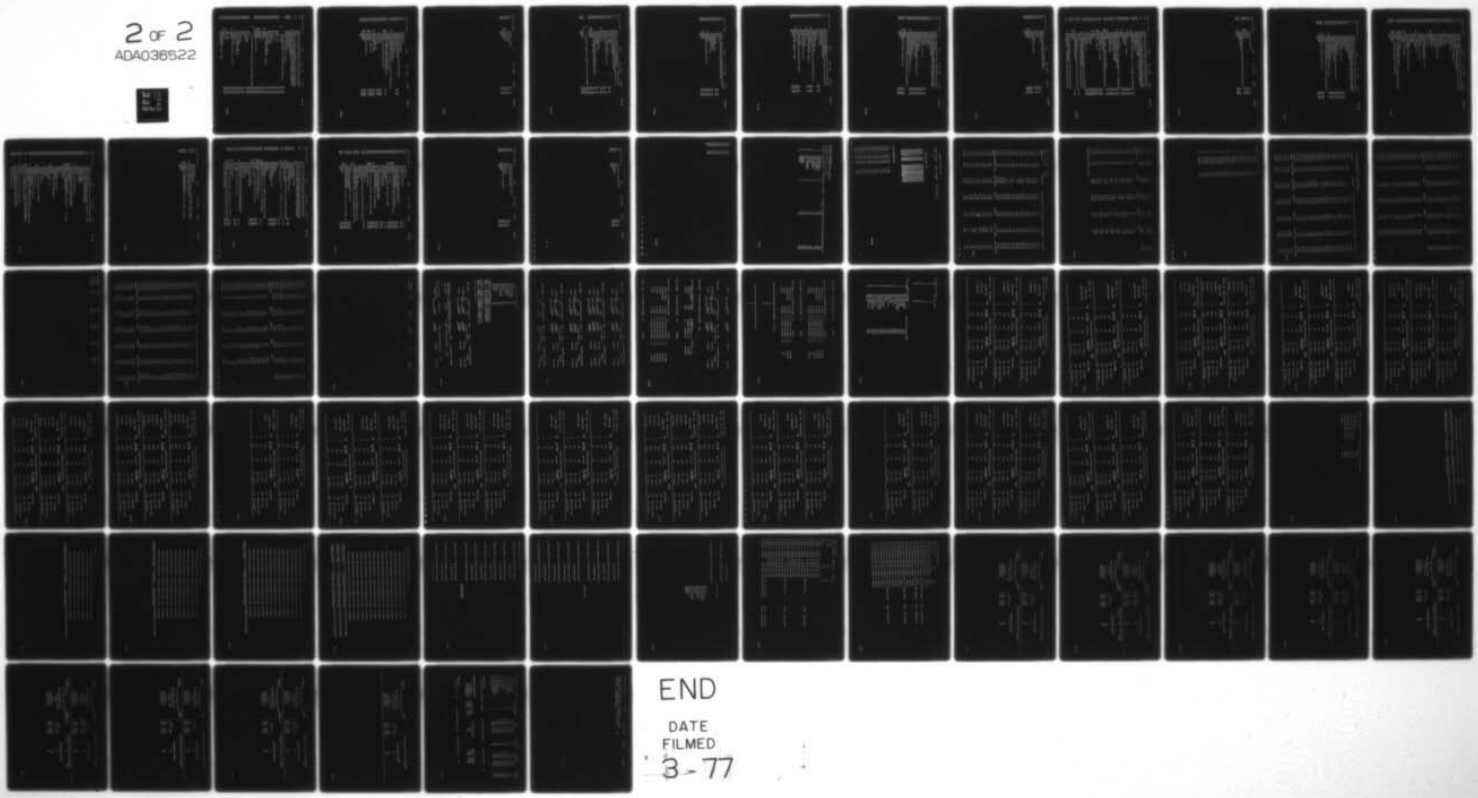
FORTRAN IV G LEVEL  21                    RM                  DATE = 76020          13/28/17                PAGE 0007

0173          5300 CALL TICHAN(TIME,IHRS,MIN)                                                    RM 16700
0174               CALL TICHAN(AMV,IHRSS,MINN)                                                   RM 16750
0175               PRINT 5350,IQ,(EQNAME(IQ,NN),NN=1,5), USENO(IQ),IHRS,MIN,IND,IHRSSRM 16800
                  1,MINN,VNSP(IQ)                                                                RM 16850
0176          5350 FORMAT(7X,I2,2X,5A4,13X,I2,11X,I3,' HRS.',2X,I2,' MIN.',12X,A4, 6XRM 16900
                  1,I3,' HRS.',2X,I2,' MINS.',6X,F6.2)                                           RM 16950
0177          5200 CONTINUE                                                                      RM 17000
0178               IND= NO                                                                       RM 17050
0179               AMVSV=0.                                                                      RM 17100
0180               IF(SUMM(1).LE.CNSTAR(1)) GOTO 5400                                            RM 17150
0181               IND=IYES                                                                      RM 17200
0182               AMVSV=SUMM(1)-CNSTAR(1)                                                       RM 17250
0183          5400 PRINT5450,SUMM(1), IND, AMVSV                                                 RM 17300
0184          5450 FORMAT('1'//6X,'TOTAL VAN SPACE'/'+',5X,'_____________'/'0',10X, RM 17350
                  1'TOTAL VAN SPACE ALLOCATED = ',F8.3,10X,'WAS CONSTRAINT VIOLATED? RM 17400
                  2 ',A4,5X,'AMOUNT OF VIOLATION =',F8.3)                                        RM 17425
0185               PRINT5451                                                                     RM 17430
0186          5451 FORMAT('1'//6X,'_________________________')                                   RM 17431
0187               PRINT5460                                                                     RM 17452
0188          5460 FORMAT('+',5X,'GRAND TOTAL ANALYSTS TIME'/'0',17X,'ANALYST',14X,'TRM 17454
                  1OTAL TIME',10X,'CONSTRAINT VIOLATED?',12X,'AMOUNT OF VIOLATION')              RM 17455
0189               DO 5475 IZ=1,4                                                                RM 17458
0190               IND=NO                                                                        RM 17460
0191               AMVSV=0.                                                                      RM 17462
0192               IF(SUMM(IZ+1).LE.CNSTAR(IZ+1)) GOTO 5485                                      RM 17464
0193               IND=IYES                                                                      RM 17466
0194               AMVSV=SUMM(IZ+1)-CNSTAR(IZ+1)                                                 RM 17468
0195          5485 TIM=SUMM(IZ+1)                                                                RM 17470
0196               CALL TICHAN(TIM,IHR,MI)                                                       RM 17472
0197               CALL TICHAN(AMVSV,IH,M)                                                       RM 17474
0198               PRINT5490,IZ,IHR,MI,IND,IH,M                                                  RM 17476
0199          5490 FORMAT(14X,'CLASSIFICATION ',I1,5X,I3,' HRS.  ',I2,' MIN.',16X,A4,RM 17478
                  120X,I3,' HRS.  ',I2,' MIN.')                                                  RM 17480
0200          5475 CONTINUE                                                                      RM 17482
0201               IND= NO                                                                       RM 17500
0202               AMVSV=0.                                                                      RM 17550
0203               IF(SUMM(6).LE.CNSTAR(6)) GOTO 5500                                            RM 17600
0204               IND=IYES                                                                      RM 17650
0205               AMVSV=SUMM(6)-CNSTAR(6)                                                       RM 17700
0206          5500 PRINT 5550,SUMM(6),IND,AMVSV                                                  RM 17750
0207          5550 FORMAT('1'//6X,'TOTAL COST'/'+',5X,'__________'/'0',10X,'TOTAL COSTRM 17800
                  1 = $ ',F7.2,10X,'WAS CONSTRAINT VIOLATED?  ',A4,5X,'AMOUNT OF VIOLRM 17850
                  2ATION = $ ',F7.2)                                                             RM 17900
0208               RETURN
0209               END                                                                           RM 17950
```

AD-A036 522 CLEMSON UNIV S C COLL OF ENGINEERING F/G 13/2
A SYSTEMS ANALYSIS OF WATER QUALITY SURVEY DESIGN. APPENDIX I. --ETC(U)
AUG 75 L C WILCOX, B E GILLILAND DADA17-72-C-2152
UNCLASSIFIED NL

2 OF 2
ADA036522



END

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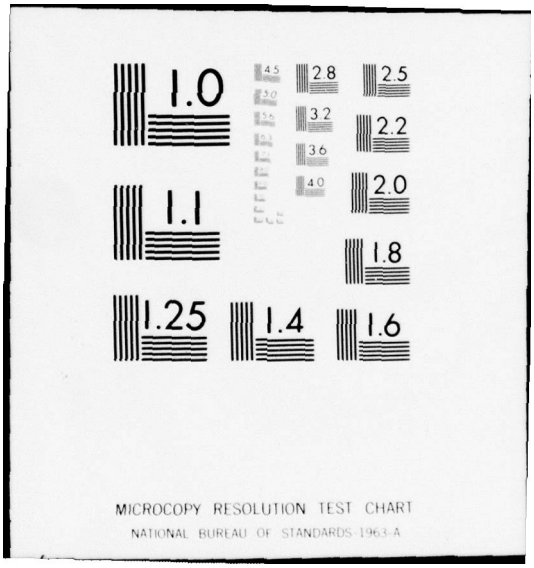
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

```
0001              SUBROUTINE CONCK(NP,POLN,MENAME,FP,IFPT,IDO,NMA,NPLA,PC,PCRM,PM,IB
                 1N,NALOW,PMDATA,SMEQTI,SAMFRE,EQUSED,EU,SUMM,NSET,MPARM,MBRNC,MBRP1
                 2,MEQ)
0002              DIMENSION POLN(MPARM,5),MENAME(MPARM,3,5),FP(400,4),IDO(MPARM,25),
                 1NMA(MPARM),NPLA(25),PC(MPARM,25,MBRNC),PCRM(MPARM,3),PM(MPARM,25,3
                 3),IBN(51,MBRP1),NALOW(MPARM,MBRNC),PMDATA(MPARM,3,4,5),SMEQTI(MEQ)
                 4,SAMFRE(MPARM),EQUSED(MPARM,MEQ),EU(MEQ),SUMM(6),NSET(MPARM,3)
0003              COMMON/RMATCH/NPOL,NL,IDUMMY
0004              COMMON/NAMED/LENGTH
0005              INTEGER EQUSED,EU,POLN
0006              INTEGER*2 IDO,NPLA,NMA,PM,FP,NALOW,IBN
                  C                                                              RS1  370
                  C          COMPARE CONCENTRATIONS TO DETERMINE FEASIBLE METHODS AT RS1  390
                  C          EACH POINT                                          RS1  400
                  C                                                              RS1  450
0007              DO 100 I=1,NP                                                  RS1  500
0008              MNCK=0                                                         RS1  525
0009              DO 200 J=1,NL                                                  RS1  550
0010              MC=0                                                           RS1  600
0011              NMAI=NMA(I)                                                    RS1  650
0012              DO 300 L=1,NMAI                                                RS1  700
0013              NPLAJ=NPLA(J)                                                  RS1  750
0014              DO 400 K=1,NPLAJ                                               RS1  800
0015              IF(PC(I,J,K).EQ.0.) GOTO 400                                   RS1  850
0016              IF(ABS(PC(I,J,K)).LT.PCRM(I,L)) GOTO 300                       RS1  900
0017            400 CONTINUE                                                     RS1  950
0018              MNCK=MNCK+1                                                    RS1  975
0019              MC=MC+1                                                        RS1 1000
0020              PM(I,J,MC)=L                                                   RS1 1050
0021            300 CONTINUE                                                     RS1 1100
0022            200 CONTINUE                                                     RS1 1150
0023              IF(MNCK.EQ.0) PM(I,1,1)=1                                      RS1 1175
0024            100 CONTINUE                                                     RS1 1200
                  C                                                            RS1 1250
                  C          ALLOCATE RESOURCES TO FLAGGED POINTS BY FIRST FEASIBLE METHOD RS1 1300
                  C                                                            RS1 1350
0025              IFPT=0                                                       RS1 1370
0026              DO 500 I=1,NP                                                RS1 1400
0027              DO 600 J=1,NL                                                RS1 1450
0028              IDO(I,J)=0
0029              KNP=0                                                        RS1 1460
0030              LN=1                                                         RS1 1475
0031              NPLAJ=NPLA(J)                                                RS1 1500
0032              DO 700 K=1,NPLAJ                                             RS1 1550
0033              IF(PC(I,J,K).GE.0.) GOTO 700                                 RS1 1600
0034              IF(PM(I,J,1).NE.0) GOTO 750                                  RS1 1605
0035              NMAI=NMA(I)                                                  RS1 1610
0036              DO 725 L=1,NMAI                                              RS1 1615
0037              IF(ABS(PC(I,J,K)).GT.PCRM(I,L)) GOTO 735                     RS1 1620
0038            725 CONTINUE                                                   RS1 1625
0039              LN=2                                                         RS1 1630
0040              PM(I,J,1)=1                                                  RS1 1635
0041              GOTO 750                                                     RS1 1640
0042            735 PM(I,J,1)=L                                                RS1 1643
0043              LN=0                                                         RS1 1646
0044            750 ITEMP=IBN(J,K+1)
0045              IF(NALOW(I,ITEMP).NE.0)GO TO 1000
0046              NALOW(I,ITEMP)=1
```

00090

```
0047              NSUB=PM(I,J,1)
0048              DO 800 IC=1,4
0049              IEQN=PMDATA(I,NSUB,IC,1)
0050              IF(IEQN.EQ.0)GO TO 910
0051              SMEQTI(IEQN)=SMEQTI(IEQN)+SAMFRE(I)*PMDATA(I,NSUB,IC,2)
0052              EQUSED(I,IEQN)=EQUSED(I,IEQN)+1                              RS1 1800
0053              EU(IEQN)=EU(IEQN)+1                                          RS1 1825
0054              IF(EU(IEQN).NE.1)GO TO 910
0055              SUMM(1)=SUMM(1)+PMDATA(I,NSUB,IC,3)
0056            910 IF(NSET(I,NSUB).NE.0)GO TO 900
0057              IF(PMDATA(I,NSUB,IC,4).NE.0.)SUMM(IC+1)=SUMM(IC+1)+LENGTH*PMDATA(I
                 1,NSUB,2,5)
0058              IF(PMDATA(I,NSUB,IC,4).NE.0.)NSET(I,NSUB)=1
0059            900 SUMM(IC+1)=SUMM(IC+1)+SAMFRE(I)*PMDATA(I,NSUB,IC,4)
0060            800 CONTINUE                                                   RS1 2000
0061              SUMM(6)=SUMM(6)+SAMFRE(I)*PMDATA(I,NSUB,1,5)
0062              IFPT=IFPT+1
0063              FP(IFPT,1)=I                                                 RS1 2060
0064              FP(IFPT,2)=J                                                 RS1 2065
0065              FP(IFPT,3)=K                                                 RS1 2070
0066              FP(IFPT,4)=PM(I,J,1)                                         RS1 2075
0067           1000 IF(LN.EQ.2)GO TO 925
0068              IF(LN.EQ.0) PM(I,J,1)=0                                      RS1 2082
0069              GOTO 940                                                     RS1 2085
0070            925 IF(J.NE.1) PM(I,J,1)=0                                     RS1 2093
0071            940 KNP=KNP+1                                                  RS1 2095
0072            700 CONTINUE                                                   RS1 2100
0073              IF(KNP.EQ.NPLAJ)IDO(I,J)=1
0074            600 CONTINUE                                                   RS1 2150
0075            500 CONTINUE                                                   RS1 2200
0076              RETURN                                                       RS1 2250
0077              END                                                          RS1 2300
```

```
0001                SUBROUTINE TO(TEMP)
0002                REAL TEMP(4,2)
0003                DO 100 I=1,4
0004                DO 200 J=1,2
0005            200 TEMP(I,J)=0.
0006            100 CONTINUE
0007                RETURN
0008                END
```

```
RS2   50
RS2  100
RS2  150
RS2  200
RS2  250
RS2  300
RS2  350
RS2  400
```

00032

```
0001                SUBROUTINE EQCHEC(I,J,L,MC,NPLAJ,IVIOL,IEQN,*,PC,AMAR,PMDATA,TEMP,
                   1SAMFRE,SMEQTI,EQTIME,MPARM,MBRNC,MP2,MEQ)
0002                DIMENSION PC(MPARM,25,MBRNC),AMAR(MPARM,MP2),PMDATA(MPARM,3,4,5),
                   1TEMP(4,2),SAMFRE(MPARM),SMEQTI(MEQ),EQTIME(MEQ)
0003                COMMON/RMATCH/NPOL,NL,IDUMMY
0004                INTEGER*2 AMAR
0005                DO 100 K=1,NPLAJ                                                  RS3  325
0006                IF(PC(I,J,K).GT.0.) GOTO 150                                      RS3  350
0007                IF(K.EQ.1.AND.AMAR(I,3).GT.0) GO TO 100
0008                AMAR(I,K+2)=0                                                     RS3  400
0009                GOTO 100                                                          RS3  450
0010              150 AMAR(I,K+2)=L                                                   RS3  500
0011                DO 200 IC=1,4                                                     RS3  550
0012                IEQN=PMDATA(I,L,IC,1)                                             RS3  600
0013                IF(IEQN.EQ.0)GO TO 200
0014                TEMP(IC,1)=IEQN                                                   RS3  650
0015                TEMP(IC,2)=TEMP(IC,2)+SAMFRE(I)*PMDATA(I,L,IC,2)                  RS3  700
0016                IF(TEMP(IC,2)+SMEQTI(IEQN).GT.EQTIME(IEQN)) GOTO 300              RS3  750
0017              200 CONTINUE                                                        RS3  800
0018              100 CONTINUE                                                        RS3  850
0019                RETURN                                                          RS3  900
                                                                                    RS3  950
                  C                                                                 RS3 1000
                  C         AN EQUIPMENT VIOLATION HAS OCCURRED AT THE LEVEL IN QUESTION RS3 1050
                  C                                                                 RS3 1050
0020              300 IVIOL=1                                                       RS3 1100
0021                RETURN 1                                                        RS3 1150
0022                END                                                             RS3 1200
```

```
0001              SUBROUTINE VSCHEC(I,L,IVIOL,SUM,*,PMDATA,EU,SUMM,CNSTAR,MPARM,MEQ)
0002              DIMENSION PMDATA(MPARM,3,4,5),EU(MEQ),SUMM(6),CNSTAR(6)
0003              INTEGER EU
0004              SUM=0                                                    RS4  325
0005              DO 10 IE=1,4                                             RS4  350
0006              IEQN=PMDATA(I,L,IE,1)                                    RS4  400
0007              IF(IEQN.EQ.0)GO TO 10
0008              VS=PMDATA(I,L,IE,2)                                      RS4  450
0009              IF(EU(IEQN).GT.1) GOTO 10                                RS4  475
0010              SUM=SUM+VS                                               RS4  500
0011           10 CONTINUE                                                 RS4  550
0012              IF(SUM+SUMM(1).GT.CNSTAR(1)) GOTO 50                     RS4  600
0013              RETURN                                                   RS4  650
0014           50 IVIOL=2                                                  RS4  700
0015              RETURN 1                                                 RS4  750
0016              END                                                      RS4  800
```

```
0001              SUBROUTINE CNCHEC(ICONNO,I,J,L,ICP,IVIOL,TOT,*,NPLA,NSET,PMDATA,AM
                 1AR,SAMFRE,SUMM,CNSTAR,MPARM,MP2)
0002              DIMENSION NPLA(25),NSET(MPARM,3),PMDATA(MPARM,3,4,5),AMAR(MPARM,MP
                 12),SAMFRE(MPARM),SUMM(6),CNSTAR(6)
0003              COMMON/NAMED/LENGTH
0004              INTEGER*2 AMAR,NPLA
0005              TOT=0.                                                          RS5  325
0006              NPLAJ=NPLA(J)                                                   RS5  350
0007              IF(ICP.EQ.5)GO TO 20
0008              IF(NSET(I,L).EQ.1)GO TO 20
0009              IF(PMDATA(I,L,ICONNO,4).NE.0.0)TOT=TOT+LENGTH*PMDATA(I,L,2,5)
0010           20 DO 10 K=1,NPLAJ                                                 RS5  400
0011              IF(AMAR(I,K+2).EQ.0) GOTO 10                                    RS5  450
0012              TOT=TOT+SAMFRE(I)*PMDATA(I,L,ICONNO,ICP)                        RS5  500
0013           10 CONTINUE                                                        RS5  550
0014              IF(ICP.NE.5)GO TO 15
0015              IF(TOT.EQ.0.)RETURN
0016              IF(TOT+SUMM(6).GT.CNSTAR(6))GO TO 50
0017              RETURN
0018           15 IF(TOT.EQ.0.)RETURN
0019              IF(TOT+SUMM(ICONNO+1).GT.CNSTAR(ICONNO+1)) GOTO 50              RS5  600
0020              RETURN                                                          RS5  650
0021           50 IVIOL=ICONNO+2                                                  RS5  700
0022              IF(ICP.EQ.5.AND.ICONNO.EQ.1) IVIOL=7                            RS5  750
0023              RETURN 1                                                        RS5  800
0024              END                                                             RS5  850
```

```
0001            SUBROUTINE  ADD(I,J,L,NPLA,PC,PMDATA,SMEQTI,SAMFRE,EQUSED,EU,NSET,
               1MPARM,MBRNC,MEQ,SUMM)
0002            DIMENSION NPLA(25),PC(MPARM,25,MBRNC),PMDATA(MPARM,3,4,5),SMEQTI(M
               1EQ),SAMFRE(MPARM),EQUSED(MPARM,MEQ),EU(MEQ),NSET(MPARM,3),SUMM(6)
0003            COMMON/RMATCH/NPOL,NL,IDUMMY
0004            COMMON/NAMED/LENGTH
0005            INTEGER*2 NPLA
0006            INTEGER EQUSED,EU
0007            NPLAJ=NPLA(J)                                                    RS6  325
0008            DO 100 K=1,NPLAJ                                                 RS6  350
0009            IF(PC(I,J,K).EQ.0.)  GOTO  100                                   RS6  400
0010            DO 200 IC=1,4                                                    RS6  450
0011            IEQN=PMDATA(I,L,IC,1)                                            RS6  500
0012            IF(IEQN.EQ.0) GOTO 300                                           RS6  524
0013            SMEQTI(IEQN)=SMEQTI(IEQN)+SAMFRE(I)*PMDATA(I,L,IC,2)             RS6  550
0014            EQUSED(I,IEQN)=EQUSED(I,IEQN)+1                                  RS6  600
0015            EU(IEQN)=EU(IEQN)+1                                              RS6  625
0016            IF(EU(IEQN).NE.1) GOTO 300                                       RS6  650
0017            SUMM(1)=SUMM(1)+PMDATA(I,L,IC,3)                                 RS6  700
0018          300 SUMM(IC+1)=SUMM(IC+1)+SAMFRE(I)*PMDATA(I,L,IC,4)               RS6  750
0019            IF(NSET(I,L).EQ.1)GO TO 200
0020            IF(PMDATA(I,L,IC,4).NE.0.0)SUMM(IC+1)=SUMM(IC+1)+LENGTH*PMDATA(I,L
               1,2,5)
0021          200 CONTINUE                                                       RS6  800
0022            SUMM(6)=SUMM(6)+SAMFRE(I)*PMDATA(I,L,1,5)                        RS6  850
0023          100 CONTINUE                                                       RS6  900
0024            RETURN                                                           RS6  950
0025            END                                                              RS6 1000
```

00096

```
0001              SUBROUTINE SET(I,J,L,PC,A,N,MPARM,MP2,MBRNC)
0002              DIMENSION PC(MPARM,25,MBRNC),A(MPARM,MP2),N(25)
0003              INTEGER*2 A,N                                          RS12  40
0004              A(I,1)=L                                               RS12  50
0005              A(I,2)=J                                               RS12  60
0006              NP=N(J)                                                RS12  70
0007              DO 20 K=1,NP                                           RS12  80
0008              IF(PC(I,J,K).GT.0.) GOTO 40
0009              A(I,K+2)=0                                             RS12 100
0010              GOTO 20                                                RS12 110
0011           40 A(I,K+2)=L                                             RS12 120
0012           20 CONTINUE                                               RS12 130
0013              RETURN                                                 RS12 140
0014              END
```

```
0001              SUBROUTINE PIEQCH(I,ISTOP,IEQNR,*,*,NOV,AMAR,PMDATA,PM,NPLA,TEMP,
                 1PC,SMEQTI,SAMFRE,EQUSED,EU,NSET,EQTIME,SUMM,CNSTAR,MPARM,MP2,MEQ,M
                 2BRNC)
0002              DIMENSION AMAR(MPARM,MP2),PMDATA(MPARM,3,4,5),PM(MPARM,25,3),NPLA(
                 125),TEMP(4,2),PC(MPARM,25,MBRNC),SMEQTI(MEQ),SAMFRE(MPARM),EQUSED(
                 3MPARM,MEQ),EU(MEQ),NSET(MPARM,3),EQTIME(MEQ),SUMM(6),CNSTAR(6)
0003              COMMON/RMATCH/NPOL,NL,IDUMMY
0004              INTEGER EQUSED,EU
0005              INTEGER*2 AMAR,PM,NPLA
0006              PRINT10,NOV,I                                                    *7   312
0007           10 FORMAT('1',5X,'VIOLATION NUMBER ',I1,' HAS OCCURRED FOR PARAMETER *7   314
                 1',I2)                                                           *7   316
0008              IMO=I                                                            RS7  325
0009           50 IMO=IMO-1                                                        RS7  350
0010              IF(IMO.LE.ISTOP)   RETURN 1                                      RS7  375
0011              LR=AMAR(IMO,1)                                                   RS7  400
0012              JR=AMAR(IMO,2)                                                   RS7  450
0013          150 JRR=JR                                                           RS7  800
0014              LRR=LR                                                           RS7  850
0015              PRINT 60,IMO,JR,LR
0016           60 FORMAT('-',10X,'PARAMETER UNDER CONSIDERATION=',I2,'. PREVIOUS ASS*7   460
                 1IGNMENT WAS AT LEVEL ',I2,' BY METHOD ',I1)                     *7   465
0017              IF(NOV.GT.2.AND.NOV.LE.6) GOTO 200                               RS7  470
0018              IF(NOV.EQ.2.OR.NOV.EQ.7) GOTO 300                                RS7  475
0019              DO 100 IC=1,4                                                    RS7  500
0020              IN=PMDATA(IMO,LR,IC,1)                                           RS7  550
0021              IF(IN.EQ.IEQNR) GOTO 300                                         RS7  600
0022          100 CONTINUE                                                         RS7  650
0023              GOTO 50                                                          RS7  750
0024          200 IF(PMDATA(IMO,LR,   NOV-2,4).LE.0.) GOTO 50                      RS7  875
0025          300 CALL SUBT(IMO,JR,LR, NPLA,PC,PMDATA,SMEQTI,SAMFRE,EQUSED,EU,NSET,
                 1MPARM,MBRNC,MEQ,SUMM)
0026              DO 400 MC=1,3                                                    RS7  950
0027              IF(LR.EQ.PM(IMO,JR,MC)) GOTO 500                                 RS7 1000
0028          400 CONTINUE                                                         RS7 1050
0029          500 IF(MC.NE.3) GOTO 550                                             RS7 1100
0030              MC=0                                                             RS7 1150
0031              JR=JR+1                                                          RS7 1200
0032          550 MC=MC+1                                                          RS7 1250
0033              DO 600 J=JR,NL                                                   RS7 1300
0034              NPLAJ=NPLA(J)                                                    RS7 1350
0035              DO 700 M=MC,3                                                    RS7 1400
0036              L=PM(IMO,J,M)                                                    RS7 1450
0037              IF(L.EQ.0) GOTO 690                                              RS7 1500
0038              CALL TO(TEMP)                                                    RS7 1550
0039              CALL EQCHEC(IMO,J,L,M,NPLAJ,IVIOL,IEQN,&700,PC,AMAR,PMDATA,TEMP,SA
                 1MFRE,SMEQTI,EQTIME,MPARM,MBRNC,MP2,MEQ)
0040              CALL VSCHEC(IMO,L,IVIOL,SUM,&700,PMDATA,EU,SUMM,CNSTAR,MPARM,MEQ)
0041              IFOUR=4
0042              DO 800 ICONNO=1,4                                                RS7 1700
0043              CALL CNCHEC(ICONNO,IMO,J,L,IFOUR,IVIOL,AT,&700,NPLA,NSET,PMDATA,AM
                 1AR,SAMFRE,SUMM,CNSTAR,MPARM,MP2)                                          00038
0044          800 CONTINUE                                                         RS7 1800
0045              IONE=1
0046              IFIVE=5
0047              CALL CNCHEC(IONE,IMO,J,L,IFIVE,IVIOL,COST,&700,NPLA,NSET,PMDATA,AM
                 1AR,SAMFRE,SUMM,CNSTAR,MPARM,MP2)
0048              CALL ADD(IMO,J,L,    NPLA,PC,PMDATA,SMEQTI,SAMFRE,EQUSED,EU,NSET,
```

```
                1MPARM,MBRNC,MEQ,SUMM)                                          RS7 1925
0049             NOV=0                                                          RS7 1950
0050             RETURN 2                                                       RS7 2000
0051          700 CONTINUE                                                      RS7 2050
0052          690 MC=1                                                          RS7 2100
0053          600 CONTINUE
0054             CALL ADD(IMO,JRR,LR, NPLA,PC,PMDATA,SMEQTI,SAMFRE,EQUSED,EU,NSET,
                1MPARM,MBRNC,MEQ,SUMM)                                          RS7 2200
0055             GOTO 50                                                        RS7 2250
0056          900 RETURN                                                        RS7 2300
0057             END
```

00089

```
0001              SUBROUTINE SUBT(I,J,L,NPLA,PC,PMDATA,SMEQTI,SAMFRE,EQUSED,EU,NSET,
                 1MPARM,MBRNC,MEQ,SUMM)
0002              DIMENSION NPLA(25),PC(MPARM,25,MBRNC),PMDATA(MPARM,3,4,5),SMEQTI(M
                 1EQ),SAMFRE(MPARM),EQUSED(MPARM,MEQ),EU(MEQ),NSET(MPARM,3),SUMM(6)
0003              COMMON/RMATCH/NPOL,NL,IDUMMY
0004              COMMON/NAMED/LENGTH
0005              INTEGER EQUSED,EU
0006              INTEGER*2 NPLA
0007              NPLAJ=NPLA(J)                                                    RS8  325
0008              DO 100 K=1,NPLAJ                                                 RS8  350
0009              IF(PC(I,J,K).EQ.0.)  GOTO  100                                   RS8  400
0010              DO 200 IC=1,4                                                    RS8  450
0011              IEQN=PMDATA(I,L,IC,1)                                            RS8  500
0012              IF(IEQN.EQ.0) GOTO 300                                           RS8  524
0013              SMEQTI(IEQN)=SMEQTI(IEQN)-SAMFRE(I)*PMDATA(I,L,IC,2)             RS8  550
0014              EQUSED(I,IEQN)=EQUSED(I,IEQN)-1                                  RS8  600
0015              EU(IEQN)=EU(IEQN)-1                                              RS8  625
0016              IF(EU(IEQN).NE.0) GOTO 300                                       RS8  650
0017              SUMM(1)=SUMM(1)-PMDATA(I,L,IC,3)                                 RS8  700
0018          300 SUMM(IC+1)=SUMM(IC+1)-SAMFRE(I)*PMDATA(I,L,IC,4)                 RS8  750
0019              IF(NSET(I,L).EQ.1)GO TO 200
0020              IF(PMDATA(I,L,IC,4).NE.0.0)SUMM(IC+1)=SUMM(IC+1)-LENGTH*PMDATA(I,L
                 1,2,5)
0021          200 CONTINUE                                                         RS8  800
0022              SUMM(6)=SUMM(6)-SAMFRE(I)*PMDATA(I,L,1,5)                        RS8  850
0023          100 CONTINUE                                                         RS8  900
0024              RETURN                                                           RS8  950
0025              END                                                              RS8 1000
```

09100

```
0001              SUBROUTINE INFORM(AMAR,IBN,NPLA,POLN,FP,IFPT,NBRNCH,BRANCH,BRN,MBR
                 1NC,MPARM,MP2,MBRP1)
0002              DIMENSION AMAR(MPARM,MP2),IBN(51,MBRP1),NPLA(25),POLN(MPARM,5),NBR
                 1NCH(MBRNC,2),BRANCH(MBRNC,MPARM),BRN(MBRNC)
0003              COMMON/PASS/NP,NB
0004              INTEGER*2 IBN,NPLA,AMAR,BRN,BRANCH
0005              INTEGER POLN
0006              INTEGER*2 FP(400,4)
0007              DO 10 I=1,NB
0008              BRN(I)=0
0009              DO 10 J=1,NP
0010             10 BRANCH(I,J)=0
0011              WRITE(3,903)
0012              DO 100 I=1,NP
0013              LEVEL=AMAR(I,2)
0014              NPTS=NPLA(LEVEL)
0015              DO 100 J=1,NPTS
0016              IF(AMAR(I,J+2).EQ.0)GO TO 100
0017              N=IBN(LEVEL,J+1)
0018              BRN(N)=BRN(N)+1
0019              NSUB=BRN(N)
0020              BRANCH(N,NSUB)=I
0021            100 CONTINUE
0022              DO 200 I=1,NB
0023              KOUNT=0
0024              DO 190 K=1,NP
0025              IF(K.EQ.1)PRINT 902,(NBRNCH(I,LL),LL=1,2)
0026              IF(BRANCH(I,K).EQ.0)GO TO 210
0027              KOUNT=1
0028              J=BRANCH(I,K)
0029              WRITE(3,900)(POLN(J,II),II=1,5)
0030              GO TO 240
0031            210 IF(IFPT.EQ.0)GO TO 211
0032              DO 212 M=1,IFPT
0033              NSUB=FP(M,1)
0034              MM=FP(M,2)
0035              NN=FP(M,3)
0036              LL=IBN(MM,NN+1)
0037              IF(LL.EQ.I)WRITE(3,900)(POLN(NSUB,II),II=1,5)
0038              IF(LL.EQ.I)KOUNT=1
0039            212 CONTINUE
0040            211 IF(KOUNT.EQ.0)WRITE(3,901)
0041              GO TO 200
0042            240 CONTINUE
0043            900 FORMAT(' ',52X,5A4)
0044            901 FORMAT(' ',27X,'NO MEASUREMENTS MADE')
0045            902 FORMAT('0',//,2X,'FOR BRANCH ',2A4,' THE PARAMETERS MEASURED ARE:'
                   1,//)
0046            903 FORMAT('1','PARAMETERS MEASURED AT EACH BRANCH')
0047            190 CONTINUE
0048            200 CONTINUE
0049              RETURN
0050              END
```

03191

```
0001            SUBROUTINE SAMPLE(SAMFRE,SUMM,IFPT,FP,IBN,NBRNCH,BRANCH,MPARM,MBRN
               1C,MBRP1,NROUT,NFLOW)
0002            DIMENSION SAMFRE(MPARM),SUMM(6),IBN(51,MBRP1),NBRNCH(MBRNC,2),BRAN
               1CH(MBRNC,MPARM),NROUT(MBRNC),NFLOW(MBRNC)
0003            DIMENSION NSAMPL(10,5),SAMPTI(10),SETUP(10)
0004            COMMON/PASS/NP,NB
0005            COMMON/NAMED/LENGTH
0006            INTEGER*2 IBN,BRANCH
0007            INTEGER*2 FP(400,4)
0008            PRINT 902
0009            PRINT 905
0010          902 FORMAT('1','SAMPLING INFORMATION')
0011            DO 30 I=1,4
0012            READ 903,(NSAMPL(I,K),K=1,5),SAMPTI(I),SETUP(I)
0013           30 PRINT 904,(NSAMPL(I,K),K=1,5),SAMPTI(I),SETUP(I)
0014          903 FORMAT(5A4,2F6.1)
0015          904 FORMAT('0',5A4,8X,F6.1,10X,F6.1)
0016          905 FORMAT('0',' SAMPLING TECHNIQUE',5X,'SAMPLE TIME     SET UP TIME')
0017            READ 906,(NROUT(I),I=1,NB)
0018          906 FORMAT(40I2)
0019            DO 10 I=1,NB
0020            KOUNT=0
0021            SMAX=0.
0022            DO 20 J=1,NP
0023            IF(BRANCH(I,J).EQ.0)GO TO 15
0024            LL=BRANCH(I,J)
0025            IF(SAMFRE(LL).GT.SMAX)SMAX=SAMFRE(LL)
0026            KOUNT=1
0027           20 CONTINUE
0028           15 IF(IFPT.EQ.0)GO TO 18
0029            DO 16 M=1,IFPT
0030            NSUB=FP(M,1)
0031            MM=FP(M,2)
0032            NN=FP(M,3)
0033            LL=IBN(MM,NN+1)
0034            IF(LL.NE.I)GO TO 16
0035            KOUNT=1
0036            IF(SAMFRE(NSUB).GT.SMAX)SMAX=S  E(NSUB)
0037           16 CONTINUE
0038           18 IF(KOUNT.EQ.0)GO TO 17
0039            KK=NROUT(I)
0040            TEMP=SMAX*SAMPTI(KK)+LENGTH*SETUP(KK)
0041            SUMM(2)=SUMM(2)+TEMP
0042           17 IF(KOUNT.EQ.0)PRINT 900,I,(NBRNCH(I,MM),MM=1,2)
0043            IF(KOUNT.EQ.1)PRINT 901,I,(NBRNCH(I,MM),MM=1,2),SMAX,(NSAMPL(KK,NN
               1),NN=1,5),TEMP
0044          900 FORMAT('0','AT BRANCH ',I2,' , ',2A4,' NO SAMPLES WERE TAKEN')
0045          901 FORMAT('0','AT BRANCH ',I2,' , ',2A4,2X,F8.2,' SAMPLES WERE TAKEN
               1USING ',5A4,' TAKING ',F8.2,' MINUTES')
0046           10 CONTINUE
0047            PRINT 908
0048          908 FORMAT('1','FLOW MEASUREMENT INFORMATION')
0049            DO 50 I=5,6
0050            READ 903,(NSAMPL(I,K),K=1,5),SAMPTI(I),SETUP(I)
0051           50 PRINT 904,(NSAMPL(I,K),K=1,5),SAMPTI(I),SETUP(I)
0052            READ 906,(NFLOW(I),I=1,NB)
0053            DO51 I=1,NB
0054            IF(NFLOW(I).EQ.0)GO TO 52
```

00102

```
0055              NSUB=NFLOW(I)+4
0056              TEMP=SETUP(NSUB)*LENGTH
0057              SUMM(2)=SUMM(2)+TEMP
0058              PRINT 909,I,(NBRNCH(I,NN),NN=1,2),(NSAMPL(NSUB,KK),KK=1,5),TEMP
0059            909 FORMAT('0','FLOW WAS MEASURED AT BRANCH ',I2,' , ',2A4,' USING THE
                   1 ',5A4,' TAKING ',F8.2,' MINUTES')
0060              GO TO 51
0061             52 PRINT 910,I,(NBRNCH(I,NN),NN=1,2)
0062            910 FORMAT('0','NO FLOW MEASUREMENTS WERE MADE AT BRANCH ',I2,2X,2A4)
0063             51 CONTINUE
0064              RETURN
0065              END
```

```
0001              SUBROUTINE PRPAR(IFPT,IFPP,FP,POLN,MENAME,EQNAME,I,AMAR,NPLA,IBN,
                 1PC,SAMFRE,PMDATA,SMEQTI,EQTIME,SUMM,CNSTAR,MPARM,MBRNC,MBRP1,MP2,
                 2MEQ)
0002              DIMENSION FP(400,4),MENAME(MPARM,3,5),EQNAME(MEQ,5),AMAR(MPARM,MP2
                 11),NPLA(25),IBN(51,MBRP1),PC(MPARM,25,MBRNC),SAMFRE(MPARM),PMDATA(M
                 2PARM,3,4,5),SMEQTI(MEQ),EQTIME(MEQ),SUMM(6),CNSTAR(6),POLN(MPARM,
                 35)
0003              COMMON/RMATCH/NPOL,NL,IDUMMY
0004              COMMON/NAMED/LENGTH
0005              INTEGER POLN,EQNAME
0006              INTEGER*2 NPLA,AMAR,FP,IBN
0007              DATA IYES/'YES '/,NO/'NO  '/,IBSP/'    '/                          RS9  370
0008            1 PRINT50                                                          RS9  390
0009           50 FORMAT('0',10X,'PARAMETER',31X,'METHOD',19X,'MEASURE POINT, BRANCH
                 1 NO., EXPECTED VALUE')
0010              PRINT51                                                          RS9  500
0011           51 FORMAT('+',10X,'_________',31X,'______',19X,'____________________
                 1____________________')
0012              LI=0                                                             RS9  650
0013              NPTS=0
0014              J=AMAR(I,2)                                                      RS9  700
0015              NPLAJ=NPLA(J)                                                    RS9  750
0016              DO 150 K=1,NPLAJ                                                 RS9  800
0017              IF(AMAR(I,K+2).EQ.0) GOTO 150                                    RS9  850
0018              IF(LI.NE.0) GOTO 100                                             RS9  900
0019              LI=LI+1                                                          RS9  950
0020              NPTS=NPTS+1
0021              NSUB=AMAR(I,1)
0022              WRITE(3,90)(POLN(I,II),II=1,5),(MENAME(I,NSUB,NN),NN=1,5),J,K,IBN(
                 1J,K+1),PC(I,J,K)
0023           90 FORMAT(13X,5A4,15X,5A4,12X,'(',I2,',',I2,')',8X,I2,9X,F9.3)
0024              GOTO 150                                                         RS9 1150
0025          100 PRINT 110,J,K,IBN(J,K+1),PC(I,J,K)
0026          110 FORMAT(80X,'(',I2,',',I2,')',8X,I2,9X,F9.3)
0027          150 CONTINUE                                                         RS9 1300
0028              IF(  LI     .EQ.0) PRINT153,(POLN(I,II),II=1,5)                  RS9 1302
0029          153 FORMAT(13X,5A4)                                                  RS9 1303
0030              KPP=0                                                            RS9 1310
0031          155 IF(IFPP.GT.IFPT) GOTO 200                                        RS9 1325
0032              IF(FP(IFPP,1).NE.I) GOTO 200                                     RS9 1350
0033              JJ=FP(IFPP,2)
0034              KK=FP(IFPP,3)
0035              NSUB=FP(IFPP,4)
0036              CO=ABS(PC(I,JJ,KK))
0037              NPTS=NPTS+1
0038              WRITE(3,160)(MENAME(I,NSUB,NN),NN=1,5),JJ,KK,IBN(JJ,KK+1),CO
0039          160 FORMAT(48X,5A4,9X,'*',2X,'(',I2,',',I2,')',8X,I2,9X,F9.3)
0040              IFPP=IFPP+1                                                      RS9 1550
0041              IF(FP(IFPP-1,4).EQ.AMAR(I,1))GO TO 155
0042              KPP=KPP+1                                                        RS9 1560
0043              GOTO 155                                                         RS9 1565
0044          200 FTOT=SAMFRE(I)*NPTS
0045              PRINT 210,FTOT
0046          210 FORMAT(21X,'TOTAL SAMPLE NUMBER EXPECTED'/26X,F6.1,'  SAMPLES')  RS9 1700
0047              PRINT250                                                         RS9 1750
0048          250 FORMAT('0',20X,'TOTAL RESOURCES ASSIGNED',40X,'WAS CONSTRAINT VIOLRS9 1800
                 1ATED'/'+',20X,'_____________________',40X,'____________________RS9 1850
                 2___'/30X,'ITEMS',29X,'TIMES')                                   RS9 1900
```

00184

```
0049              NSUB=AMAR(I,1)
0050              DO 300 IC=1,4                                                  RS9 1950
0051              IEQN=PMDATA(I,NSUB,IC,1)
0052              IF(IEQN.EQ.0) GOTO 355                                         RS9 2050
0053              IND= NO                                                        RS9 2100
0054              TIME=SAMFRE(I)*PMDATA(I,NSUB,IC,2)*(NPTS-KPP)
0055              IF(SMEQTI(IEQN).GT.EQTIME(IEQN)) IND=IYES                      RS9 2200
0056              CALL TICHAN(TIME,IHRS,MIN)                                     RS9 2250
0057              PRINT350,IC,(EQNAME(IEQN,NN),NN=1,5),IHRS,MIN,IND              RS9 2300
0058          350 FORMAT(26X,I1,2X,5A4,9X,I3,' HRS.',2X,I2,' MINS.',19X,A4)      RS9 2350
0059          300 CONTINUE                                                       RS9 2400
0060          355 IF(KPP.EQ.0) GOTO 400                                          RS9 2405
0061              PRINT360                                                       RS9 2410
0062          360 FORMAT('0',29X,'FLAGGED POINT ITEMS',15X,'TIMES')              RS9 2415
0063              NSUB=FP(IFPP-KPP,4)
0064              DO 375 IC2=1,4                                                 RS9 2417
0065              IEQN=PMDATA(I,NSUB,IC2,1)
0066              IF (IEQN.EQ.0) GOTO 400                                        RS9 2421
0067              IND=NO                                                         RS9 2423
0068              TIME=SAMFRE(I)*PMDATA(I,NSUB,IC2,2)*KPP
0069              IF(SMEQTI(IEQN).GT.EQTIME(IEQN)) IND=YES                       RS9 2427
0070              CALL TICHAN(TIME,IHRS,MIN)                                     RS9 2429
0071              PRINT350,IC2,(EQNAME(IEQN,NN),NN=1,5),IHRS,MIN,IND             RS9 2431
0072          375 CONTINUE                                                       RS9 2433
0073              PRINT380                                                       RS9 2435
0074          380 FORMAT('0',20X,'ANALYST TIMES ARE SUMMED FOR BOTH METHODS')    RS9 2437
0075          400 PRINT450                                                       RS9 2450
0076          450 FORMAT('0',29X,'ANALYST')                                      RS9 2500
0077              NSUB=AMAR(I,1)
0078              NSUB1=FP(IFPP-KPP,4)
0079              DO 500 NAN=1,4                                                 RS9 2550
0080              TIME=SAMFRE(I)*PMDATA(I,NSUB,NAN,4)*(NPTS-KPP)+SAMFRE(I)*PMDATA(I,
                 1NSUB1,NAN,4)*KPP
0081              NUM=NPTS-KPP
0082              IF(NUM.EQ.0)GO TO 600
0083              IF(PMDATA(I,NSUB,NAN,4).NE.0.)TIME=TIME+LENGTH*PMDATA(I,NSUB,2,5)
0084              IF(NSUB.EQ.NSUB1)GO TO 610
0085          600 IF(PMDATA(I,NSUB1,NAN,4).NE.0.)TIME=TIME+LENGTH*PMDATA(I,NSUB1,2,5)
                 1)
0086          610 IND=NO
0087              IF(SUMM(NAN+1).GT.CNSTAR(NAN+1)) IND=IYES                      RS9 2700
0088              CALL TICHAN(TIME,IHRS,MIN)                                     RS9 2750
0089              PRINT550,NAN,IHRS,MIN,IND                                      RS9 2800
0090          550 FORMAT(26X,'CLASSIFICATION ',I1,16X,I3,' HRS.',2X,I2,' MINS.',19X,RS9 2850
                 1A4)                                                           RS9 2900
0091          500 CONTINUE                                                       RS9 2950
0092              RETURN                                                         RS9 3000
0093              END                                                            RS9 3050
```

00105

```
0001              SUBROUTINE USECT(E,NP,NE,U,MPARM,MEQ)
0002              INTEGER E(MPARM,MEQ),U(MEQ)
0003              DO 5 L=1,75
0004            5 U(L)=0
0005              DO 10 IE=1,NE
0006              DO 10 I=1,NP
0007              IF(E(I,IE).GT.0) U(IE)=U(IE)+1
0008           10 CONTINUE
0009              RETURN
0010              END
```

```
RS11 150
RS11 200
RS11 250
RS11 300
RS11 350
RS11 400
RS11 450
RS11 500
```

```
0001          SUBROUTINE TICHAN(T,IHRS,MIN)
0002          I=T
0003          IHRS=I/60
0004          MIN=T-60*IHRS
0005          RETURN
0006          END
```

```
RS10  50
RS10 100
RS10 150
RS10 200
RS10 250
RS10 300
```

```
PPND      0.40
PAPC      0.57
PAOP      0.48
PSAC      0.30
PNAC      1.60
PAPP      0.89
PNBP      0.50
PSWG      0.27
PBDN      0.08
PBIX      0.01
PCOW      0.30
PCWZ      0.20
PBPP      0.20
PBEX      0.45
PNGS      2.00
PNCS      0.09
0
0
```

00108

THE NUMBER OF PARAMETERS = 17
THE FIRST 0 ARE NON-COMPETING PARAMETERS

THE LENGTH OF THE SURVEY IS 5 DAYS

PARAMETER #	PARAMETER NAME	# OF METHODS AVAIL. FOR ANAL.	# OF SAMPLES TO BE ANALYZED/DAY/SAMPLE POINT	TOTAL #SAMPLES/POINT
1	PH	3	12.0	60.0
2	CONDUCTIVITY	3	12.0	60.0
3	DISSOLVED SOLIDS	3	5.0	25.0
4	NITRITE/NITRATE(N)	3	4.0	20.0
5	TOTAL N(KJEHDAHL)	3	4.0	20.0
6	TOTAL SOLIDS	3	1.0	5.0
7	SUSPENDED SOLIDS	3	1.0	5.0
8	TOTAL HARDNESS	3	6.0	30.0
9	SULFATES	3	4.0	20.0
10	CHLORIDES	3	4.0	20.0
11	VOL SUSP SOLIDS	3	4.0	20.0
12	TOTAL PHOSPHATES	3	4.0	20.0
13	TNT	2	4.0	20.0
14	CALCIUM	2	4.0	20.0
15	ALKALINITY	3	4.0	20.0
16	TURBIDITY	3	4.0	20.0
17	ACIDITY	3	4.0	20.0

00199

TOPOLOGICAL DEFINITION DATA

NUMBER OF SOURCES	NUMBER OF BRANCHES	NUMBER OF OUTFALLS
16	21	1

TOPOLOGY MATRIX DATA

SOURCE 1	PPND	11000000000C000001203
SOURCE 2	PAPC	01000000000000001203
SOURCE 3	PAOP	00100000000000001203
SOURCE 4	PSAC	00001112000000001203
SOURCE 5	PNAC	00011112000000001203
SOURCE 6	PAPP	00000112000000001203
SOURCE 7	PNBP	00000000120000001203
SOURCE 8	PSWG	00000000000000000023
SOURCE 9	PBDN	00000000001000001203
SOURCE10	PBIX	00000000001000001203
SOURCE11	PCOW	00000000001000001203
SOURCE12	PCWZ	00000000001000001203
SOURCE13	PBPP	00000000000010001203
SOURCE14	PBEX	00000000000000110011203
SOURCE15	PNGS	00000000000000011011203
SOURCE16	PNCS	00000000000000000111203

POLLUTANT MATRIX DATA

SOURCE 1	PPND	FLOW	0.400
SOURCE 2	PAPC	FLOW	0.001
SOURCE 3	PAOP	FLOW	0.017
SOURCE 4	PSAC	FLOW	0.039
SOURCE 5	PNAC	FLOW	0.077
SOURCE 6	PAPP	FLOW	0.890
SOURCE 7	PNBP	FLOW	0.008
SOURCE 8	PSWG	FLOW	0.270
SOURCE 9	PBDN	FLOW	0.000
SOURCE 10	PBIX	FLOW	0.010
SOURCE 11	PCOW	FLOW	0.014
SOURCE 12	PCWZ	FLOW	0.200
SOURCE 13	PBPP	FLOW	0.001

00110

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SOURCE 15 PNGS FLOW 0.002

SOURCE 16 PNCS FLOW 0.002

PARAMETER SOURCE	PH	CONDUCTIVITY	DISSOLVED SOLIDS	NITRITE/NITRATE(N)	TOTAL N(KJEHDAHL)	TOTAL SOLIDS
1 PPND	6.000	0.0	250.000	0.500	2.300	290.000
2 PAPC	7.700	416.000	240.000	14.000	1.800	243.000
3 PAOP	7.500	346.000	240.000	3.200	0.030	244.000
4 PSAC	2.500	726.000	360.000	3.700	2.300	403.000
5 PNAC	6.300	726.000	593.000	29.000	1.100	603.000
6 PAPP	6.200	0.0	270.000	4.000	2.200	300.000
7 PNBP	2.500	564.000	2600.000	104.000	17.000	2650.000
8 PSWG	6.700	534.000	259.000	1.400	1.500	283.000
9 PBDN	6.400	0.0	270.000	0.800	2.200	300.000
10 PBIX	7.000	0.0	251.000	0.530	2.200	254.000
11 PCOW	6.400	600.000	390.000	0.500	2.300	440.000
12 PCWZ	6.400	0.0	390.000	0.500	2.300	440.000
13 PBPP	5.300	357.000	530.000	7.500	0.700	590.000
14 PBEX	6.200	1000.000	186.000	0.630	2.200	200.000
15 PNGS	7.300	1220.000	523.000	5.800	2.540	531.000
16 PNCS	7.000	1200.000	523.000	5.800	5.200	531.000

PARAMETER SOURCE	SUSPENDED SOLIDS	TOTAL HARDNESS	SULFATES	CHLORIDES	VOL SUSP SOLIDS	TOTAL PHOSPHATES
1 PPND	29.000	90.000	50.000	9.300	102.000	0.630
2 PAPC	1.900	122.000	50.000	1.700	0.0	0.030
3 PAOP	0.700	90.000	50.000	1.300	102.000	0.030
4 PSAC	40.000	90.000	262.000	9.300	102.000	0.630
5 PNAC	7.100	90.000	262.000	9.300	102.000	0.030
6 PAPP	30.000	122.000	50.000	1.700	0.0	0.630
7 PNBP	5.000	25.000	2000.000	32.000	12.000	0.600
8 PSWG	18.000	123.000	68.000	17.300	12.000	1.000
9 PBDN	30.000	122.000	50.000	1.700	0.0	0.630
10 PBIX	2.700	122.000	76.000	1.700	0.0	0.630
11 PCOW	40.000	90.000	50.000	9.300	10.000	0.630

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12 PCWZ	40.000	90.000	90.000	9.300	102.000	0.630
13 PBPP	55.000	35.000	64.000	24.000	55.000	4.810
14 PBEX	14.000	90.000	38.000	9.800	102.000	0.630
15 PNGS	8.000	90.000	50.000	0.0	0.0	0.680
16 PNCS	8.000	90.000	110.000	9.300	102.000	0.630

PARAMETER TNT SOURCE		CALCIUM	ALKALINITY	TURBIDITY	ACIDITY
1 PPND	0.0	0.0	70.000	0.0	0.0
2 PAPC	0.0	98.000	79.000	0.0	2.000
3 PAOP	0.0	68.000	69.000	0.0	3.400
4 PSAC	0.0	68.000	0.0	10.000	90.000
5 PNAC	0.0	68.000	50.000	15.000	9.200
6 PAPP	0.0	0.0	62.000	0.0	0.0
7 PNBP	0.0	20.000	0.0	4.000	100.000
8 PSWG	0.0	0.0	79.000	0.0	0.0
9 PBDN	0.0	92.000	62.000	0.0	10.000
10 PBIX	0.0	0.0	62.000	0.0	0.0
11 PCOW	0.0	60.000	100.000	3.000	10.000
12 PCWZ	0.0	0.0	70.000	0.0	0.0
13 PBPP	0.0	20.000	58.000	76.000	30.000
14 PBEX	0.0	70.000	62.000	0.0	0.0
15 PNGS	0.0	70.000	60.000	11.100	20.000
16 PNCS	0.0	68.000	80.000	0.0	0.0

CLARIFIER AREA IN ACRES IS 90.000

BRANCH NO.	AND NAME	FLOW
1	BRANCH1	0.400
2	BRANCH2	0.401
3	BRANCH3	0.017
4	BRANCH4	0.077
5	BRANCH5	0.116
6	BRANCH6	1.006
7	BRANCH7	1.006
8	BRANCH8	1.006
9	BRANCH9	0.008
10	BRANCH10	0.008
11	BRANCH11	0.024
12	BRANCH12	0.200
13	BRANCH13	0.001
14	BRANCH14	0.002
15	BRANCH15	0.002
16	BRANCH16	0.002
17	BRANCH17	0.006
18	BRANCH18	1.663
19	BRANCH19	1.663
20	BRANCH20	0.270
21	BRANCH21	1.933

00113

OUTPUT POLLUTANT DATA MATRIX FROM TOP SUBROUTINE
NUMBER OF BRANCHES= 21 NUMBER OF PARAMETERS= 17

PARAMETER ELEMENT	PH	CONDUCTIVITY	DISSOLVED SOLIDS	NITRITE/NITRATE(N)	TOTAL N(KJEHDAHL)	TOTAL SOLIDS
1 BRANCH1	6.000	0.0	250.000	0.500	2.300	290.000
2 BRANCH2	6.002	1.536	249.963	0.550	2.298	289.826
3 BRANCH3	7.500	346.000	240.000	3.200	0.030	244.000
4 BRANCH4	6.300	726.000	593.000	29.000	1.100	603.000
5 BRANCH5	3.473	726.000	514.528	20.479	1.504	535.642
6 BRANCH6	6.205	83.586	298.153	5.897	2.120	327.130
7 BRANCH7	6.105	83.586	298.153	5.897	2.120	327.130
8 BRANCH8	7.000	83.586	335.614	5.897	2.120	372.083
9 BRANCH9	2.500	564.000	2599.999	104.000	17.000	2650.000
10 BRANCH10	7.000	564.000	2698.885	104.000	17.000	2768.664
11 BRANCH11	6.459	353.172	332.868	0.513	2.259	363.604
12 BRANCH12	6.400	0.0	390.000	0.500	2.300	440.000
13 BRANCH13	5.300	357.000	530.000	7.500	0.700	590.000
14 BRANCH14	6.200	1000.000	186.000	0.630	2.200	200.000
15 BRANCH15	7.300	1220.000	523.000	5.800	2.540	531.000
16 BRANCH16	7.000	1200.000	523.000	5.800	5.200	531.000
17 BRANCH17	6.460	1134.400	401.680	3.939	3.269	411.840
18 BRANCH18	6.546	66.384	332.106	4.316	2.240	370.680
19 BRANCH19	7.000	66.384	363.612	4.316	2.240	408.486
20 BRANCH20	7.000	534.000	269.707	1.400	1.500	295.849
21 BRANCH21	7.000	131.692	350.497	3.909	2.137	357.286

PARAMETER ELEMENT	SUSPENDED SOLIDS	TOTAL HARDNESS	SULFATES	CHLORIDES	VOL SUSP SOLIDS	TOTAL PHOSPHATES
1 BRANCH1	29.000	90.000	50.000	9.300	102.000	0.630
2 BRANCH2	28.900	90.118	50.000	9.272	101.623	0.628
3 BRANCH3	0.700	90.000	50.000	1.300	102.000	0.030
4 BRANCH4	7.100	90.000	262.000	9.300	102.000	0.030
5 BRANCH5	18.180	90.000	262.000	9.300	102.000	0.232
6 BRANCH6	28.639	118.316	74.408	2.575	11.743	0.584

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8 BRANCH8	36.131	179.064	74.408	2.575	11.743	0.564
9 BRANCH9	5.000	25.000	2000.000	32.000	12.000	0.600
10 BRANCH10	24.777	185.357	2000.000	32.000	12.000	0.600
11 BRANCH11	24.727	103.164	60.628	6.174	5.886	0.630
12 BRANCH12	40.000	90.000	50.000	9.300	102.000	0.630
13 BRANCH13	55.000	35.000	64.000	24.000	55.000	4.810
14 BRANCH14	14.000	90.000	38.000	9.800	102.000	0.630
15 BRANCH15	8.000	90.000	50.000	0.0	0.0	0.680
16 BRANCH16	8.000	90.000	110.000	9.300	102.000	0.630
17 BRANCH17	10.160	90.000	64.880	6.504	69.360	0.646
18 BRANCH18	34.180	144.520	74.351	5.202	45.355	0.597
19 BRANCH19	40.481	195.610	74.351	5.202	45.355	0.597
20 BRANCH20	20.141	140.363	68.000	17.300	12.000	1.000
21 BRANCH21	6.789	187.894	73.464	6.892	7.341	0.653

PARAMETER TNT ELEMENT		CALCIUM	ALKALINITY	TURBIDITY	ACIDITY
1 BRANCH1	0.0	0.0	70.000	0.0	385.176
2 BRANCH2	0.0	0.362	70.033	0.0	384.077
3 BRANCH3	0.0	68.000	69.000	0.0	81.952
4 BRANCH4	0.0	68.000	50.000	15.000	172.000
5 BRANCH5	0.0	68.000	-20.092	13.316	144.383
6 BRANCH6	0.0	7.829	52.549	1.533	227.300
7 BRANCH7	0.0	7.829	52.549	1.533	227.300
8 BRANCH8	0.0	32.128	103.173	1.533	149.444
9 BRANCH9	0.0	20.000	-158.118	4.000	100.000
10 BRANCH10	0.0	84.143	-24.487	4.000	-35.470
11 BRANCH11	0.0	35.558	84.368	1.766	207.353
12 BRANCH12	0.0	0.0	70.000	0.0	195.385
13 BRANCH13	0.0	20.000	58.000	76.000	1401.770
14 BRANCH14	0.0	70.000	62.000	0.0	238.089
15 BRANCH15	0.0	70.000	60.000	11.100	93.373
16 BRANCH16	0.0	68.000	80.000	0.0	115.879
17 BRANCH17	0.0	69.360	67.120	3.552	152.673

18 BRANCH18	0.0	21.372	[illegible]	[illegible]	
19 BRANCH19	0.0	41.828	132.376	1.012	191.744
20 BRANCH20	0.0	6.945	93.469	0.0	135.389
21 BRANCH21	0.0	36.956	126.942	0.157	183.874

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MASS OUTPUT INFORMATION, POUNDS PER DAY

PARAMETER ELEMENT	PH	CONDUCTIVITY	DISSOLVED SOLIDS	NITRITE/NITRATE(N)	TOTAL N(KJEHDAHL)	TOTAL SOLIDS
1 BRANCH1	0.000	0.0	834.539	1.669	7.678	968.065
2 BRANCH2	0.000	5.145	837.507	1.842	7.700	971.071
3 BRANCH3	0.000	49.896	34.610	0.461	0.004	35.187
4 BRANCH4	0.000	465.312	380.069	18.587	0.705	386.478
5 BRANCH5	0.000	701.603	497.238	19.791	1.454	517.643
6 BRANCH6	0.000	701.603	2502.636	49.501	17.794	2745.861
7 BRANCH7	0.000	701.603	2502.636	49.501	17.794	2745.861
8 BRANCH8	0.000	701.603	2817.080	49.501	17.794	3123.195
9 BRANCH9	0.000	37.654	173.584	6.943	1.135	176.922
10 BRANCH10	0.000	37.654	180.186	6.943	1.135	184.845
11 BRANCH11	0.000	72.104	67.959	0.105	0.461	74.234
12 BRANCH12	0.000	0.0	650.941	0.835	3.839	734.395
13 BRANCH13	0.000	1.788	2.654	0.038	0.004	2.954
14 BRANCH14	0.000	16.899	3.143	0.011	0.037	3.380
15 BRANCH15	0.000	18.326	7.856	0.087	0.038	7.977
16 BRANCH16	0.000	18.026	7.856	0.087	0.078	7.977
17 BRANCH17	0.000	53.252	18.856	0.185	0.153	19.333
18 BRANCH18	0.000	921.442	4609.785	59.909	31.090	5145.203
19 BRANCH19	0.000	921.442	5047.094	59.909	31.090	5669.973
20 BRANCH20	0.000	1203.239	607.719	3.155	3.380	666.623
21 BRANCH21	0.000	2124.681	5654.813	63.064	34.470	5764.348

PARAMETER ELEMENT	SUSPENDED SOLIDS	TOTAL HARDNESS	SULFATES	CHLORIDES	VOL SUSP SOLIDS	TOTAL PHOSPHATES
1 BRANCH1	96.807	300.434	166.908	31.045	340.492	2.103
2 BRANCH2	96.830	301.943	167.526	31.066	340.492	2.103
3 BRANCH3	0.101	12.979	7.210	0.187	14.709	0.004
4 BRANCH4	4.551	57.683	167.922	5.961	65.374	0.019
5 BRANCH5	17.569	86.976	253.196	8.987	98.572	0.224
6 BRANCH6	240.391	993.119	624.566	21.614	98.572	4.904
7 BRANCH7	240.391	993.119	624.566	21.614	98.572	4.904
8 BRANCH8	303.280	1533.031	624.566	21.614	98.572	4.904

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9 BRANCH9	0.334	1.669	[illegible]	[illegible]		
10 BRANCH10	1.654	12.375	133.526	2.136	0.801	0.040
11 BRANCH11	5.048	21.062	12.378	1.260	1.202	0.129
12 BRANCH12	66.763	150.217	83.454	15.522	170.246	1.052
13 BRANCH13	0.275	0.175	0.320	0.120	0.275	0.024
14 BRANCH14	0.237	1.521	0.642	0.166	1.724	0.011
15 BRANCH15	0.120	1.352	0.751	0.0	0.0	0.010
16 BRANCH16	0.120	1.352	1.652	0.140	1.532	0.009
17 BRANCH17	0.477	4.225	3.046	0.305	3.256	0.030
18 BRANCH18	474.429	2006.007	1032.026	72.212	629.553	8.286
19 BRANCH19	561.891	2715.154	1032.026	72.212	629.553	8.286
20 BRANCH20	45.384	316.274	153.221	38.981	27.039	2.253
21 BRANCH21	109.538	3031.428	1185.248	111.193	118.434	10.539

PARAMETER TNT ELEMENT		CALCIUM	ALKALINITY	TURBIDITY	ACIDITY
1 BRANCH1	0.0	0.0	233.671	0.0	1285.777
2 BRANCH2	0.0	1.212	234.648	0.0	1286.861
3 BRANCH3	0.0	9.806	9.950	0.0	11.818
4 BRANCH4	0.0	43.583	32.046	9.614	110.239
5 BRANCH5	0.0	65.715	19.417	12.869	139.531
6 BRANCH6	0.0	65.715	441.082	12.869	1907.914
7 BRANCH7	0.0	65.715	441.082	12.869	1907.914
8 BRANCH8	0.0	269.679	866.010	12.869	1254.405
9 BRANCH9	0.0	1.335	10.556	0.267	6.676
10 BRANCH10	0.0	5.618	1.635	0.267	2.368
11 BRANCH11	0.0	7.260	17.225	0.361	42.334
12 BRANCH12	0.0	0.0	116.836	0.0	326.112
13 BRANCH13	0.0	0.100	0.290	0.381	7.019
14 BRANCH14	0.0	1.183	1.048	0.0	4.024
15 BRANCH15	0.0	1.052	0.961	0.167	1.403
16 BRANCH16	0.0	1.021	1.202	0.0	1.741
17 BRANCH17	0.0	3.256	3.151	0.167	7.167
18 BRANCH18	0.0	296.930	1246.475	14.043	2933.341

20	BRANCH20	0.0	15.649	[illegible]	[illegible]	[illegible]
21	BRANCH21	0.0	596.239	2048.045	2.533	2966.561

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      PARAMETER  MINIMUM FLAG LEVELS
PH                          .99
CONDUCTIVITY                .99
DISSOLVED SOLIDS            .33
NITRITE/NITRATE(N)          .99
TOTAL N(KJEHDAHL)           .99
TOTAL SOLIDS                .99
SUSPENDED SOLIDS            .99
TOTAL HARDNESS              .99
SULFATES                    .99
CHLORIDES                   .99
VOL SUSP SOLIDS             .99
TOTAL PHOSPHATES            .99
TNT                         .99
CALCIUM                     .99
ALKALINITY                  .99
TURBIDITY                   .99
ACIDITY                     .99

THE NUMBER OF FLAGGED POINTS IS  4
SOURCE  4 , PSAC THE PARAMETER IS NITRITE/NITRATE(N)
SOURCE  6 , PAPP THE PARAMETER IS DISSOLVED SOLIDS
SOURCE  6 , PAPP THE PARAMETER IS NITRITE/NITRATE(N)
SOURCE  6 , PSWG THE PARAMETER IS TOTAL PHOSPHATES

THE NUMBER OF FLAGGED POINTS IS  3
BRANCH  1 , BRANCH1  THE PARAMETER IS TOTAL HARDNESS
BRANCH  1 , BRANCH1  THE PARAMETER IS SULFATES
BRANCH 13 , BRANCH13 THE PARAMETER IS SUSPENDED SOLIDS

NB= 21  NS= 16  NP= 17


 SOURCE NUMBER    1   IS UNIQUELY DETERMINED ON     BRANCH    1   WHERE    3   PARAMETERS WERE MEASURED.

                    FLOW            MODEL             0.400000  MODIFIED TO            0.340000

        DISSOLVED SOLIDS        MEASURED          200.000000           CALCULATED          249.999954
                    SOURCE CORRECTED TO          200.000000

        ACIDITY                 MEASURED          370.000000           CALCULATED          385.175537
                    SOURCE CORRECTED TO          370.000000



  SOURCE NUMBER    2  IS UNIQUELY DETERMINED ON     BRANCH    2   WHERE    2   PARAMETERS WERE MEASURED.
   OTHER SOURCE(S)  ALSO CONTRIBUTE TO THIS BRANCH AS INDICATED.

  SOURCE NUMBER    1       FLOW RATE            0.340000   PERCENT CONTRIBUTION      99.707



FLOW RATE OF SOURCE    2 IS MODIFIED TO            0.001000 A PERCENT CONTRIBUTION OF     0.293

THER PARAMETERS FOLLOW.
        ACIDITY                 MEASURED          370.000000           CALCULATED          384.077393
                    SOURCE CORRECTED TO          369.999756
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SOURCE NUMBER 3 IS UNIQUELY DETERMINED ON BRANCH 3 WHERE 3 PARAMETERS WERE MEASURED.

FLOW	MODEL	0.017280	MODIFIED TO	0.020000	
DISSOLVED SOLIDS	MEASURED	250.000000	CALCULATED	239.999924	
	SOURCE CORRECTED TO	250.000000			
ACIDITY	MEASURED	100.000000	CALCULATED	81.951843	
	SOURCE CORRECTED TO	100.000000			

SOURCE NUMBER 7 IS UNIQUELY DETERMINED ON BRANCH 10 WHERE 4 PARAMETERS WERE MEASURED.

FLOW	MODEL	0.008000	MODIFIED TO	0.009000	
DISSOLVED SOLIDS	MEASURED	2200.000000	CALCULATED	2698.886719	
	SOURCE CORRECTED TO	2200.000000			
SULFATES	MEASURED	2000.000000	CALCULATED	2000.001221	
	SOURCE CORRECTED TO	2000.000000			
ACIDITY	MEASURED	60.000000	CALCULATED	35.469635	
	SOURCE CORRECTED TO	60.000000			

SOURCE NUMBER 12 IS UNIQUELY DETERMINED ON BRANCH 12 WHERE 3 PARAMETERS WERE MEASURED.

FLOW	MODEL	0.200000	MODIFIED TO	0.238000	
DISSOLVED SOLIDS	MEASURED	370.000000	CALCULATED	390.000000	
	SOURCE CORRECTED TO	370.000000			
ACIDITY	MEASURED	180.000000	CALCULATED	195.384598	
	SOURCE CORRECTED TO	180.000000			

SOURCE NUMBER 13 IS UNIQUELY DETERMINED ON BRANCH 13 WHERE 3 PARAMETERS WERE MEASURED.

FLOW	MODEL	0.000600	MODIFIED TO	0.000800	
DISSOLVED SOLIDS	MEASURED	570.000000	CALCULATED	529.999756	
	SOURCE CORRECTED TO	570.000000			
ACIDITY	MEASURED	1200.000000	CALCULATED	1401.769775	
	SOURCE CORRECTED TO	1200.000000			

SOURCE NUMBER 15 IS UNIQUELY DETERMINED ON BRANCH 15 WHERE 3 PARAMETERS WERE MEASURED.

FLOW	MODEL	0.001800	MODIFIED TO	0.002300	
DISSOLVED SOLIDS	MEASURED	450.000000	CALCULATED	522.999756	

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        ACIDITY                  MEASURED          100.000000          CALCULATED          93.373367
                    SOURCE CORRECTED TO          100.000000


 SOURCE NUMBER    8   IS UNIQUELY DETERMINED ON     BRANCH   20   WHERE    3   PARAMETERS WERE MEASURED.

                    FLOW             MODEL            0.270000  MODIFIED TO            0.321000

        DISSOLVED SOLIDS         MEASURED          240.000000          CALCULATED        269.707031
                    SOURCE CORRECTED TO          240.000000

        ACIDITY                  MEASURED          115.000000          CALCULATED        135.388657
                    SOURCE CORRECTED TO          115.000000


SOURCE NUMBER   6 IS UNIQUELY DETERMINED ON BRANCHES   6 AND   5


SOURCE NUMBER   6 FLOW MODIFIED FROM          0.890000 TO          1.040998
        DISSOLVED SOLIDS      MODEL        270.000000 CORRECTED TO        250.830811

        SULFATES              MODEL         50.000000 CORRECTED TO         63.443832

        ACIDITY               MODEL          0.0      CORRECTED TO        210.451614


FLOW OF SOURCE   4 IS ESTIMATED FROM BRANCH   5 AS          0.045803


FLOW OF SOURCE   5 IS ESTIMATED FROM BRANCH   5 AS          0.090197
        DISSOLVED SOLIDS      OF SOURCE   4 IS ESTIMATED FROM BRANCH   5 AS        321.847900

        DISSOLVED SOLIDS      OF SOURCE   5 IS ESTIMATED FROM BRANCH   5 AS        530.155273

        SULFATES              OF SOURCE   4 IS ESTIMATED FROM BRANCH   5 AS        250.000107

        SULFATES              OF SOURCE   5 IS ESTIMATED FROM BRANCH   5 AS        249.999969

        ACIDITY               OF SOURCE   4 IS ESTIMATED FROM BRANCH   5 AS         74.800873

        ACIDITY               OF SOURCE   5 IS ESTIMATED FROM BRANCH   5 AS          7.646317
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FLOW OF SOURCE   9 IS ESTIMATED FROM BRANCH  11 AS          0.000073
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FLOW OF SOURCE  10 IS ESTIMATED FROM BRANCH  11 AS          0.011445


FLOW OF SOURCE  11 IS ESTIMATED FROM BRANCH  11 AS          0.016481
        DISSOLVED SOLIDS      OF SOURCE   9 IS ESTIMATED FROM BRANCH  11 AS        259.562256
        DISSOLVED SOLIDS      OF SOURCE  10 IS ESTIMATED FROM BRANCH  11 AS        241.296906
        DISSOLVED SOLIDS      OF SOURCE  11 IS ESTIMATED FROM BRANCH  11 AS        374.923340
        ACIDITY               OF SOURCE   9 IS ESTIMATED FROM BRANCH  11 AS          8.198573
        ACIDITY               OF SOURCE  10 IS ESTIMATED FROM BRANCH  11 AS          0.0
        ACIDITY               OF SOURCE  11 IS ESTIMATED FROM BRANCH  11 AS          8.198575


FLOW OF SOURCE  14 IS ESTIMATED FROM BRANCH  17 AS          0.002520


FLOW OF SOURCE  16 IS ESTIMATED FROM BRANCH  17 AS          0.002240
        DISSOLVED SOLIDS      OF SOURCE  14 IS ESTIMATED FROM BRANCH  17 AS        162.069260
        DISSOLVED SOLIDS      OF SOURCE  16 IS ESTIMATED FROM BRANCH  17 AS        455.710693
        ACIDITY               OF SOURCE  14 IS ESTIMATED FROM BRANCH  17 AS          0.0
        ACIDITY               OF SOURCE  16 IS ESTIMATED FROM BRANCH  17 AS          0.0


  9 SOURCES HAVE BEEN DETERMINED FROM MEASUREMENTS,  THEY ARE;
                              1
                              2
                              3
                              7
                             12
                             13
                             15
                              8
                              6

                                                                                  03123

  7 SOURCES HAVE BEEN ESTIMATED FROM MEASUREMENTS,THEY ARE;
                              4
                              5
                              9
                             10
                             11
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THE TOPOLOGY OF THE SITE

LEVEL	# OF TEST POINTS
1	1
2	2
3	2
4	9
5	9
6	9
7	9
8	9
9	9
10	11
11	11
12	11
13	11
14	11
15	11

TOTAL # OF ITEMS OF EQUIPMENT = 28

EQ. CODE #	EQ. NAME	TOTAL TIME AVAIL./TIME PERIOD
1	EXPD SCALE PH MET	420.0
2	VIS SPECTROPHOT	420.0
3	PH PREPARATION	420.0
4	PH MEASUREMENT	420.0
5	AUTOMATIC BURET	1680.0
6	HEATER,EXTRACT RACK	420.0
7	CONDUCTIVITY METER	420.0
8	ANAL BALANCE	1680.0
9	OVEN (105 C)	1440.0
10	OVEN (180 C)	1680.0
11	DESSICATOR	1440.0
12	TECHNICON	420.0
13	CARBON ANALYZER	420.0
14	BLENDER	420.0
15	LAB HOOD	1440.0
16	KJDL DIGEST RACK	420.0
17	VACUUM SOURCE	1680.0
18	MAGNETIC STIRRER	1260.0
19	NEPHELOMETER(HACH)	420.0
20	SEPERATORY FUNNELS	420.0
21	FUNNEL RACK	420.0
22	MUFFLE FURNACE	1440.0
23	AA SPECTROPHOT	420.0
24	TECH AUTOANALYZER2	420.0
25	GAS CHROM WI FID	420.0
26	CENTRIFUGE	420.0
27	HACH TURBIDMETER	420.0
28	HOTPLATE	420.0

PARAMETER NAME PH NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME ELECTROMETRIC MINIMUM ACCEPTABLE CONCENTRATION 0.0100

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
PH PREPARATION	3	3.00	8.00	0.0	CLASS 1	0.0	COST SAMPLE
PH MEASUREMENT	4	1.00	3.00	1.00	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 2 NAME ELECTROMETRIC MINIMUM ACCEPTABLE CONCENTRATION 0.0100

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
PH PREPARATION	3	3.00	8.00	0.0	CLASS 1	0.0	COST SAMPLE
PH MEASUREMENT	4	1.00	3.00	0.0	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	1.00	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 3 NAME ELECTROMETRIC MINIMUM ACCEPTABLE CONCENTRATION 0.0100

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
PH PREPARATION	3	3.00	8.00	0.0	CLASS 1	0.0	COST SAMPLE
PH MEASUREMENT	4	1.00	3.00	0.0	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	1.00	CLASS 4	0.0	TIME CONSTRAINT

PARAMETER NAME CONDUCTIVITY NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME 154 MINIMUM ACCEPTABLE CONCENTRATION 5.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
CONDUCTIVITY METER	7	1.00	6.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	2.00	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 2 NAME 154 MINIMUM ACCEPTABLE CONCENTRATION 5.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
CONDUCTIVITY METER	7	1.00	6.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	0.0	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	2.00	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 3 NAME 154 MINIMUM ACCEPTABLE CONCENTRATION 5.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
CONDUCTIVITY METER	7	1.00	6.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	0.0	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	2.00	CLASS 4	0.0	TIME CONSTRAINT

PARAMETER NAME DISSOLVED SOLIDS NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME 148B (180 C OVEN) MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (105 C)	9	120.00	6.00	40.00	CLASS 2	20.00	SET UP TIME
OVEN (180 C)	10	12.00	4.00	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
DESSICATOR	11	240.00	4.00	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 2 NAME 148B (180 C OVEN) MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (105 C)	9	120.00	6.00	0.0	CLASS 2	20.00	SET UP TIME
DESSICATOR	11	240.00	4.00	40.00	CLASS 3	24.00	WHERE ANALYSIS DONE
OVEN (180 C)	10	12.00	4.00	0.0	CLASS 4	1.00	TIME CONSTRAINT

METHOD 3 NAME FILTER RESIDUE 105 C MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (105 C)	9	120.00	6.00	30.00	CLASS 2	20.00	SET UP TIME
DESSICATOR	11	240.00	4.00	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

PARAMETER NAME NITRITE/NITRATE(N) NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME TECHNICON MINIMUM ACCEPTABLE CONCENTRATION 0.1000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
TECHNICON	12	6.00	20.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	0.0	CLASS 2	30.00	SET UP TIME
	0	0.0	0.0	7.00	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 2 NAME 133A ODSA MINIMUM ACCEPTABLE CONCENTRATION 0.1000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
VIS SPECTROPHOT	2	1.00	10.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	0.0	CLASS 2	20.00	SET UP TIME
	0	0.0	0.0	30.00	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 3 NAME 133A ODSA MINIMUM ACCEPTABLE CONCENTRATION 0.1000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
VIS SPECTROPHOT	2	1.00	10.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	0.0	CLASS 2	20.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	30.00	CLASS 4	24.00	TIME CONSTRAINT

PARAMETER NAME TOTAL N(KJEHDAHL) NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME TECHNICON MINIMUM ACCEPTABLE CONCENTRATION 0.1000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
TECHNICON	12	6.00	20.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	0.0	CLASS 2	30.00	SET UP TIME
	0	0.0	0.0	9.00	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 2 NAME 135 ORG N MINIMUM ACCEPTABLE CONCENTRATION 0.0500

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
LAB HOOD	15	24.00	22.50	0.0	CLASS 1	0.0	COST SAMPLE
KJDL DIGEST RACK	16	24.00	0.0	0.0	CLASS 2	60.00	SET UP TIME
EXPD SCALE PH MET	1	8.00	0.0	8.00	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 3 NAME 135 ORG N MINIMUM ACCEPTABLE CONCENTRATION 0.0500

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
LAB HOOD	15	24.00	22.50	0.0	CLASS 1	0.0	COST SAMPLE
KJDL DIGEST RACK	16	24.00	0.0	0.0	CLASS 2	60.00	SET UP TIME
EXPD SCALE PH MET	1	8.00	0.0	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	8.00	CLASS 4	24.00	TIME CONSTRAINT

PARAMETER NAME TOTAL SOLIDS NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME 224A TR(105 C) MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (105 C)	9	120.00	6.00	10.00	CLASS 2	10.00	SET UP TIME
DESSICATOR	11	240.00	4.00	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 2 NAME 148A TR(180 C) MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (105 C)	9	120.00	6.00	10.00	CLASS 2	10.00	SET UP TIME
OVEN (180 C)	10	12.00	4.00	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
DESSICATOR	11	240.00	4.00	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 3 NAME 148A TR(180 C) MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (105 C)	9	120.00	6.00	0.0	CLASS 2	10.00	SET UP TIME
OVEN (180 C)	10	12.00	4.00	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
DESSICATOR	11	240.00	4.00	10.00	CLASS 4	24.00	TIME CONSTRAINT

PARAMETER NAME SUSPENDED SOLIDS NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME 148C NFRES(180 C) MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (180 C)	10	12.00	4.00	10.00	CLASS 2	20.00	SET UP TIME
DESSICATOR	11	240.00	4.00	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
VACUUM SOURCE	17	30.00	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 2 NAME 224C TSM(105 C) MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (105 C)	9	120.00	6.00	40.00	CLASS 2	20.00	SET UP TIME
DESSICATOR	11	240.00	4.00	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
VACUUM SOURCE	17	30.00	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 3 NAME 224C TSM(105 C) MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (105 C)	9	120.00	6.00	0.0	CLASS 2	20.00	SET UP TIME
DESSICATOR	11	240.00	4.00	0.0	CLASS 3	1.00	WHERE ANALYSIS DONE
VACUUM SOURCE	17	30.00	0.0	40.00	CLASS 4	24.00	TIME CONSTRAINT

PARAMETER NAME TNT NUMBER OF METHODS AVAILABLE FOR ANALYSIS 2

METHOD 1 NAME GAS CHROM MINIMUM ACCEPTABLE CONCENTRATION 1.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
GAS CHROM WI FID	25	1.00	0.0	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	C.0	0.0	CLASS 2	2.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 2 NAME TECHNICON MINIMUM ACCEPTABLE CONCENTRATION 1.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
TECHNICON	12	6.00	20.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	0.0	CLASS 2	30.00	SET UP TIME
	0	0.0	0.0	5.00	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.C	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

PARAMETER NAME TOTAL HARDNESS NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME EDTA MINIMUM ACCEPTABLE CONCENTRATION 0.0

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
MAGNETIC STIRRER	18	2.40	1.00	0.0	CLASS 1	0.0	COST SAMPLE
AUTOMATIC BURET	5	2.50	8.00	2.00	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 2 NAME EDTA MINIMUM ACCEPTABLE CONCENTRATION 0.0

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
MAGNETIC STIRRER	18	2.40	1.00	0.0	CLASS 1	0.0	COST SAMPLE
AUTOMATIC BURET	5	2.50	8.00	0.0	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	2.00	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 3 NAME EDTA MINIMUM ACCEPTABLE CONCENTRATION 0.0

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
MAGNETIC STIRRER	18	2.40	1.00	0.0	CLASS 1	0.0	COST SAMPLE
AUTOMATIC BURET	5	2.50	8.00	0.0	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	2.00	CLASS 4	0.0	TIME CONSTRAINT

03133

PARAMETER NAME SULFATES NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME 156C TURB MINIMUM ACCEPTABLE CONCENTRATION 2.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
NEPHELOMETER(HACH)	19	4.00	6.00	0.0	CLASS 1	0.0	COST SAMPLE
MAGNETIC STIRRER	18	2.40	1.00	4.00	CLASS 2	10.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 2 NAME 156C TURB MINIMUM ACCEPTABLE CONCENTRATION 2.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
NEPHELOMETER(HACH)	19	4.00	6.00	0.0	CLASS 1	0.0	COST SAMPLE
MAGNETIC STIRRER	18	2.40	1.00	0.0	CLASS 2	10.00	SET UP TIME
	0	0.0	0.0	4.00	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 3 NAME 156C TURB MINIMUM ACCEPTABLE CONCENTRATION 2.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
NEPHELOMETER(HACH)	19	4.00	6.00	0.0	CLASS 1	0.0	COST SAMPLE
MAGNETIC STIRRER	18	2.40	1.00	0.0	CLASS 2	10.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	4.00	CLASS 4	24.00	TIME CONSTRAINT

PARAMETER NAME CHLORIDES NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME CHLOR TITR MINIMUM ACCEPTABLE CONCENTRATION 0.0

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
AUTOMATIC BURET	5	2.50	8.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	2.50	CLASS 2	20.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 2 NAME CHLOR TITR MINIMUM ACCEPTABLE CONCENTRATION 0.0

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
AUTOMATIC BURET	5	2.50	8.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	0.0	CLASS 2	20.00	SET UP TIME
	0	0.0	0.0	2.50	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 3 NAME CHLOR TITR MINIMUM ACCEPTABLE CONCENTRATION 0.0

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
AUTOMATIC BURET	5	2.50	8.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	0.0	CLASS 2	20.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	2.50	CLASS 4	0.0	TIME CONSTRAINT

PARAMETER NAME VOL SUSP SOLIDS NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME 148D FIX RES NF MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (105 C)	9	120.00	6.00	20.00	CLASS 2	30.00	SET UP TIME
DESSICATOR	11	240.00	4.00	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
VACUUM SOURCE	17	30.00	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 2 NAME 148D FIX RES NF MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (105 C)	9	120.00	6.00	0.0	CLASS 2	30.00	SET UP TIME
DESSICATOR	11	240.00	4.00	20.00	CLASS 3	0.0	WHERE ANALYSIS DONE
VACUUM SOURCE	17	30.00	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 3 NAME 148D FIX RES NF MINIMUM ACCEPTABLE CONCENTRATION 25.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
ANAL BALANCE	8	15.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
OVEN (105 C)	9	120.00	6.00	0.0	CLASS 2	30.00	SET UP TIME
DESSICATOR	11	240.00	4.00	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
VACUUM SOURCE	17	30.00	0.0	20.00	CLASS 4	24.00	TIME CONSTRAINT

PARAMETER NAME TOTAL PHOSPHATES NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME TECHNICON-SM223C MINIMUM ACCEPTABLE CONCENTRATION 0.2000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
TECH AUTOANALYZER2	24	3.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
HOTPLATE	28	2.00	18.00	0.0	CLASS 2	30.00	SET UP TIME
	0	0.0	0.0	3.00	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 2 NAME TECHNICON-SM223C MINIMUM ACCEPTABLE CONCENTRATION 0.2000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
TECH AUTOANALYZER2	24	3.00	5.00	0.0	CLASS 1	0.0	COST SAMPLE
HOTPLATE	28	2.00	18.00	0.0	CLASS 2	30.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	3.00	CLASS 4	0.0	TIME CONSTRAINT

METHOD 3 NAME SM223-C/E MINIMUM ACCEPTABLE CONCENTRATION 0.3000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
VIS SPECTROPHOT	2	1.00	10.00	0.0	CLASS 1	0.0	COST SAMPLE
HOTPLATE	28	2.00	18.00	0.0	CLASS 2	20.00	SET UP TIME
	0	0.0	0.0	8.00	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

00137

PARAMETER NAME CALCIUM NUMBER OF METHODS AVAILABLE FOR ANALYSIS 2

METHOD 1 NAME 110C EDTA TITR MINIMUM ACCEPTABLE CONCENTRATION 0.1000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
AUTOMATIC BURET	5	2.50	8.00	0.0	CLASS 1	0.0	COST SAMPLE
MAGNETIC STIRRER	18	2.40	1.00	0.0	CLASS 2	10.00	SET UP TIME
	0	0.0	0.0	4.00	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 2 NAME ATOMIC ABSORB MINIMUM ACCEPTABLE CONCENTRATION 0.1000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
AA SPECTROPHOT	23	1.00	24.00	2.00	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	3.00	CLASS 2	0.0	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

PARAMETER NAME ALKALINITY NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME ALK TITR MINIMUM ACCEPTABLE CONCENTRATION 1.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
EXPD SCALE PH MET	1	8.00	2.00	0.0	CLASS 1	0.0	COST SAMPLE
PH PREPARATION	3	3.00	8.00	5.00	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 2 NAME ALK TITR MINIMUM ACCEPTABLE CONCENTRATION 1.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
EXPD SCALE PH MET	1	8.00	2.00	0.0	CLASS 1	0.0	COST SAMPLE
PH PREPARATION	3	3.00	8.00	0.0	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	5.00	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 3 NAME ALK TITR MINIMUM ACCEPTABLE CONCENTRATION 1.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
EXPD SCALE PH MET	1	8.00	2.00	0.0	CLASS 1	0.0	COST SAMPLE
PH PREPARATION	3	3.00	8.00	0.0	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	5.00	CLASS 4	0.0	TIME CONSTRAINT

PARAMETER NAME TURBIDITY NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME HACH TURBIDMETER MINIMUM ACCEPTABLE CONCENTRATION 2.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
HACH TURBIDMETER	27	2.00	4.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	2.00	CLASS 2	25.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 2 NAME HACH TURBIDMETER MINIMUM ACCEPTABLE CONCENTRATION 2.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
HACH TURBIDMETER	27	2.00	4.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	0.0	CLASS 2	25.00	SET UP TIME
	0	0.0	0.0	2.00	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	24.00	TIME CONSTRAINT

METHOD 3 NAME HACH TURBIDMETER MINIMUM ACCEPTABLE CONCENTRATION 2.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
HACH TURBIDMETER	27	2.00	4.00	0.0	CLASS 1	0.0	COST SAMPLE
	0	0.0	0.0	0.0	CLASS 2	25.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	2.00	CLASS 4	24.00	TIME CONSTRAINT

PARAMETER NAME ACIDITY NUMBER OF METHODS AVAILABLE FOR ANALYSIS 3

METHOD 1 NAME SM 201 MINIMUM ACCEPTABLE CONCENTRATION 1.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
EXPD SCALE PH MET	1	3.00	4.00	0.0	CLASS 1	0.0	COST SAMPLE
PH PREPARATION	3	3.00	8.00	7.00	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 2 NAME SM 201 MINIMUM ACCEPTABLE CONCENTRATION 1.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
EXPD SCALE PH MET	1	3.00	4.00	0.0	CLASS 1	0.0	COST SAMPLE
PH PREPARATION	3	3.00	8.00	0.0	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	7.00	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	0.0	CLASS 4	0.0	TIME CONSTRAINT

METHOD 3 NAME SM 201 MINIMUM ACCEPTABLE CONCENTRATION 1.0000

EQUIPMENT NAME	CODE #	EQ. TIME PER SAMPLE	VAN SPACE	AVG. ANALYSTS TIME/SAMPLE		MISCELLANEOUS	
EXPD SCALE PH MET	1	3.00	4.00	0.0	CLASS 1	0.0	COST SAMPLE
PH PREPARATION	3	3.00	8.00	0.0	CLASS 2	5.00	SET UP TIME
	0	0.0	0.0	0.0	CLASS 3	0.0	WHERE ANALYSIS DONE
	0	0.0	0.0	7.00	CLASS 4	0.0	TIME CONSTRAINT

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CONSTRAINTS ON AVAILABLE RESOURCES (EXCLUDING EQUIPMENT TIME CONSTRAINTS)

		CONSTRAINT
TOTAL VAN SPACE		1000.000
TOTAL ANALYSTS TIME	(CLASS 1)	840.000
TOTAL ANALYSTS TIME	(CLASS 2)	840.000
TOTAL ANALYSTS TIME	(CLASS 3)	1260.000
TOTAL ANALYSTS TIME	(CLASS 4)	420.000
TOTAL COST		$ 100.00

VIOLATION NUMBER 1 HAS OCCURRED FOR PARAMETER 3

PARAMETER UNDER CONSIDERATION= 2. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 2

PARAMETER UNDER CONSIDERATION= 1. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 2

AN EQUIPMENT VIOLATION OCCURRED FOR OVEN (105 C) WHILE METHOD AND LEVEL ASSIGNMENTS WERE BEING CONSIDERED
FOR PARAMETER DISSOLVED SOLIDS . VIOLATION NOTED, ASSIGNMENTS CONTINUING.

AN EQUIPMENT VIOLATION OCCURRED FOR OVEN (105 C) WHILE METHOD AND LEVEL ASSIGNMENTS WERE BEING CONSIDERED
FOR PARAMETER TOTAL SOLIDS . VIOLATION NOTED, ASSIGNMENTS CONTINUING.

VIOLATION NUMBER 1 HAS OCCURRED FOR PARAMETER .

PARAMETER UNDER CONSIDERATION= 6. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 5. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 4. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 3. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 2. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 2

PARAMETER UNDER CONSIDERATION= 1. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 2

AN EQUIPMENT VIOLATION OCCURRED FOR DESSICATOR WHILE METHOD AND LEVEL ASSIGNMENTS WERE BEING CONSIDERED
FOR PARAMETER SUSPENDED SOLIDS . VIOLATION NOTED, ASSIGNMENTS CONTINUING.

VIOLATION NUMBER 1 HAS OCCURRED FOR PARAMETER 11

PARAMETER UNDER CONSIDERATION=10. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 3

PARAMETER UNDER CONSIDERATION= 9. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 3

PARAMETER UNDER CONSIDERATION= 8. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 3

PARAMETER UNDER CONSIDERATION= 7. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 6. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 5. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 4. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 3. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 2. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 2

PARAMETER UNDER CONSIDERATION= 1. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 2

AN EQUIPMENT VIOLATION OCCURRED FOR OVEN (105 C) WHILE METHOD AND LEVEL ASSIGNMENTS WERE BEING CONSIDERED
FOR PARAMETER VOL SUSP SOLIDS . VIOLATION NOTED, ASSIGNMENTS CONTINUING.

VIOLATION NUMBER 5 HAS OCCURRED FOR PARAMETER 14

PARAMETER UNDER CONSIDERATION=13. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION=12. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION=11. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION=10. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 3

PARAMETER UNDER CONSIDERATION= 9. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 3

PARAMETER UNDER CONSIDERATION= 8. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 3

PARAMETER UNDER CONSIDERATION= 7. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 6. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 5. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 4. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 3. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 1

PARAMETER UNDER CONSIDERATION= 2. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 2

PARAMETER UNDER CONSIDERATION= 1. PREVIOUS ASSIGNMENT WAS AT LEVEL 1 BY METHOD 2

A VIOLATION ON ANALYSTS TIME CLASSIFICATION 3 OCCURED WHILE METHOD AND LEVEL ASSIGNMENTS WERE BEING CONSIDERED
FOR PARAMETER CALCIUM . VIOLATION NOTED, ASSIGNMENTS CONTINUING.

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VIOLATION NUMBER 4 HAS OCCURRED FOR PARAMETER 15

     PARAMETER UNDER CONSIDERATION=14. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 1

     PARAMETER UNDER CONSIDERATION=13. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 1

     PARAMETER UNDER CONSIDERATION=12. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 1

     PARAMETER UNDER CONSIDERATION=11. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 1

     PARAMETER UNDER CONSIDERATION=10. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 3

     PARAMETER UNDER CONSIDERATION= 9. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 3

     PARAMETER UNDER CONSIDERATION= 8. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 3

     PARAMETER UNDER CONSIDERATION= 7. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 1

     PARAMETER UNDER CONSIDERATION= 6. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 1

     PARAMETER UNDER CONSIDERATION= 5. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 1

     PARAMETER UNDER CONSIDERATION= 4. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 1

     PARAMETER UNDER CONSIDERATION= 3. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 1

     PARAMETER UNDER CONSIDERATION= 2. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 2

     PARAMETER UNDER CONSIDERATION= 1. PREVIOUS ASSIGNMENT WAS AT LEVEL  1 BY METHOD 2

A VIOLATION ON ANALYSTS TIME CLASSIFICATION 2 OCCURED WHILE METHOD AND LEVEL ASSIGNMENTS WERE BEING CONSIDERED
FOR PARAMETER ALKALINITY          . VIOLATION NOTED, ASSIGNMENTS CONTINUING.

A VIOLATION ON ANALYSTS TIME CLASSIFICATION 2 OCCURED WHILE METHOD AND LEVEL ASSIGNMENTS WERE BEING CONSIDERED
FOR PARAMETER TURBIDITY           . VIOLATION NOTED, ASSIGNMENTS CONTINUING.

A VIOLATION ON ANALYSTS TIME CLASSIFICATION 2 OCCURED WHILE METHOD AND LEVEL ASSIGNMENTS WERE BEING CONSIDERED
FOR PARAMETER ACIDITY             . VIOLATION NOTED, ASSIGNMENTS CONTINUING.
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PARAMETERS MEASURED AT EACH BRANCH

FOR BRANCH BRANCH1 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH2 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH3 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH4 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH5 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH6 THE PARAMETERS MEASURED ARE:

DISSOLVED SOLIDS
NITRITE/NITRATE(N)

FOR BRANCH BRANCH7 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH8 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH9 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH10 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH11 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH12 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH13 THE PARAMETERS MEASURED ARE:

SUSPENDED SOLIDS

FOR BRANCH BRANCH14 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH15 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH16 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH17 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

FOR BRANCH BRANCH18 THE PARAMETERS MEASURED ARE:

NO MEASUREMENTS MADE

NO MEASUREMENTS MADE

FOR BRANCH BRANCH20 THE PARAMETERS MEASURED ARE:

TOTAL PHOSPHATES

FOR BRANCH BRANCH21 THE PARAMETERS MEASURED ARE:

PH
CONDUCTIVITY
DISSOLVED SOLIDS
NITRITE/NITRATE(N)
TOTAL N(KJEHDAHL)
TOTAL SOLIDS
SUSPENDED SOLIDS
TOTAL HARDNESS
SULFATES
CHLORIDES
VOL SUSP SOLIDS
TOTAL PHOSPHATES
CALCIUM
ALKALINITY
TURBIDITY
ACIDITY

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SAMPLING INFORMATION

SAMPLING TECHNIQUE	SAMPLE TIME	SET UP TIME
EASY GRAB	5.0	5.0
HARD GRAB	15.0	5.0
ISCO	20.0	5.0
PROTECH	5.0	5.0

AT BRANCH 1 , BRANCH1 NO SAMPLES WERE TAKEN

AT BRANCH 2 , BRANCH2 NO SAMPLES WERE TAKEN

AT BRANCH 3 , BRANCH3 NO SAMPLES WERE TAKEN

AT BRANCH 4 , BRANCH4 NO SAMPLES WERE TAKEN

AT BRANCH 5 , BRANCH5 NO SAMPLES WERE TAKEN

AT BRANCH 6 , BRANCH6 25.00 SAMPLES WERE TAKEN USING ISCO TAKING 525.00 MINUTES

AT BRANCH 7 , BRANCH7 NO SAMPLES WERE TAKEN

AT BRANCH 8 , BRANCH8 NO SAMPLES WERE TAKEN

AT BRANCH 9 , BRANCH9 NO SAMPLES WERE TAKEN

AT BRANCH 10 , BRANCH10 NO SAMPLES WERE TAKEN

AT BRANCH 11 , BRANCH11 NO SAMPLES WERE TAKEN

AT BRANCH 12 , BRANCH12 NO SAMPLES WERE TAKEN

AT BRANCH 13 , BRANCH13 5.00 SAMPLES WERE TAKEN USING ISCO TAKING 125.00 MINUTES

AT BRANCH 14 , BRANCH14 NO SAMPLES WERE TAKEN

AT BRANCH 15 , BRANCH15 NO SAMPLES WERE TAKEN

AT BRANCH 16 , BRANCH16 NO SAMPLES WERE TAKEN

AT BRANCH 17 , BRANCH17 NO SAMPLES WERE TAKEN

AT BRANCH 18 , BRANCH18 NO SAMPLES WERE TAKEN

AT BRANCH 19 , BRANCH19 NO SAMPLES WERE TAKEN

AT BRANCH 20 , BRANCH20 20.00 SAMPLES WERE TAKEN USING EASY GRAB TAKING 125.00 MINUTES

AT BRANCH 21 , BRANCH21 60.00 SAMPLES WERE TAKEN USING EASY GRAB TAKING 325.00 MINUTES

FLOW MEASUREMENT INFORMATION

STEVENS RECORDER	0.0	20.0
GURLEY METER	0.0	30.0

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 1 BRANCH1

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 2 BRANCH2

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 3 BRANCH3

FLOW WAS MEASURED AT BRANCH 4 , BRANCH4 USING THE STEVENS RECORDER TAKING 100.00 MINUTES

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 5 BRANCH5

FLOW WAS MEASURED AT BRANCH 6 , BRANCH6 USING THE STEVENS RECORDER TAKING 100.00 MINUTES

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 7 BRANCH7

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 8 BRANCH8

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 9 BRANCH9

FLOW WAS MEASURED AT BRANCH 10 , BRANCH10 USING THE STEVENS RECORDER TAKING 100.00 MINUTES

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 11 BRANCH11

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 12 BRANCH12

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 13 BRANCH13

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 14 BRANCH14

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 15 BRANCH15

FLOW WAS MEASURED AT BRANCH 16 , BRANCH16 USING THE STEVENS RECORDER TAKING 100.00 MINUTES

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 17 BRANCH17

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 18 BRANCH18

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 19 BRANCH19

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 20 BRANCH20

NO FLOW MEASUREMENTS WERE MADE AT BRANCH 21 BRANCH21

PARAMETER	METHOD	MEASURE POINT, BRANCH NO., EXPECTED VALUE		
PH	ELECTROMETRIC	(1, 1)	21	7.000

TOTAL SAMPLE NUMBER EXPECTED
60.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS		TIMES	
1	PH PREPARATION	3 HRS. 0 MINS.	NO
2	PH MEASUREMENT	1 HRS. 0 MINS.	NO
ANALYST			
CLASSIFICATION 1		0 HRS. 0 MINS.	YES
CLASSIFICATION 2		0 HRS. 25 MINS.	YES
CLASSIFICATION 3		1 HRS. 25 MINS.	YES
CLASSIFICATION 4		0 HRS. 0 MINS.	NO

PARAMETER	METHOD	MEASURE POINT, BRANCH NO., EXPECTED VALUE		
CONDUCTIVITY	154	(1, 1)	21	131.692

TOTAL SAMPLE NUMBER EXPECTED
60.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS		TIMES	
1	CONDUCTIVITY METER	1 HRS. 0 MINS.	NO
ANALYST			
CLASSIFICATION 1		0 HRS. 0 MINS.	YES
CLASSIFICATION 2		0 HRS. 25 MINS.	YES
CLASSIFICATION 3		2 HRS. 25 MINS.	YES
CLASSIFICATION 4		0 HRS. 0 MINS.	NO

PARAMETER	METHOD		MEASURE POINT, BRANCH NO., EXPECTED VALUE		
DISSOLVED SOLIDS	1488 (180 C OVEN)		(1, 1)	21	350.497
	1488 (180 C OVEN)		* (6, 7)	6	298.153

TOTAL SAMPLE NUMBER EXPECTED
50.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS	TIMES		
1 ANAL BALANCE	12 HRS.	30 MINS.	NO
2 OVEN (105 C)	100 HRS.	0 MINS.	YES
3 OVEN (180 C)	10 HRS.	0 MINS.	NO
4 DESSICATOR	200 HRS.	0 MINS.	YES
ANALYST			
CLASSIFICATION 1	0 HRS.	0 MINS.	YES
CLASSIFICATION 2	35 HRS.	0 MINS.	YES
CLASSIFICATION 3	0 HRS.	0 MINS.	YES
CLASSIFICATION 4	0 HRS.	0 MINS.	NO

PARAMETER	METHOD		MEASURE POINT, BRANCH NO., EXPECTED VALUE		
NITRITE/NITRATE(N)	TECHNICON		(1, 1)	21	3.909
	TECHNICON		* (6, 7)	6	5.897

TOTAL SAMPLE NUMBER EXPECTED
40.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS	TIMES		
1 TECHNICON	4 HRS.	0 MINS.	NO
ANALYST			
CLASSIFICATION 1	0 HRS.	0 MINS.	YES
CLASSIFICATION 2	0 HRS.	0 MINS.	YES
CLASSIFICATION 3	7 HRS.	10 MINS.	YES
CLASSIFICATION 4	0 HRS.	0 MINS.	NO

PARAMETER	METHOD	MEASURE POINT	BRANCH NO.	EXPECTED VALUE
TOTAL N(KJEHDAHL)	TECHNICON	(1, 1)	21	2.137

TOTAL SAMPLE NUMBER EXPECTED
20.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS	TIMES		
1 TECHNICON	2 HRS.	0 MINS.	NO
ANALYST			
CLASSIFICATION 1	0 HRS.	0 MINS.	YES
CLASSIFICATION 2	0 HRS.	0 MINS.	YES
CLASSIFICATION 3	5 HRS.	30 MINS.	YES
CLASSIFICATION 4	0 HRS.	0 MINS.	NO

PARAMETER	METHOD	MEASURE POINT	BRANCH NO.	EXPECTED VALUE
TOTAL SOLIDS	224A TR(105 C)	(1, 1)	21	357.286

TOTAL SAMPLE NUMBER EXPECTED
5.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS	TIMES		
1 ANAL BALANCE	1 HRS.	15 MINS.	NO
2 OVEN (105 C)	10 HRS.	0 MINS.	YES
3 DESSICATOR	20 HRS.	0 MINS.	YES
ANALYST			
CLASSIFICATION 1	0 HRS.	0 MINS.	YES
CLASSIFICATION 2	1 HRS.	40 MINS.	YES
CLASSIFICATION 3	0 HRS.	0 MINS.	YES
CLASSIFICATION 4	0 HRS.	0 MINS.	NO

PARAMETER	METHOD	MEASURE POINT	BRANCH NO.	EXPECTED VALUE
SUSPENDED SOLIDS	148C NFRES(180 C)	(1, 1)	21	6.789
	148C NFRES(180 C)	* (4, 3)	13	55.000

TOTAL SAMPLE NUMBER EXPECTED
10.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS		TIMES	
1	ANAL BALANCE	2 HRS. 30 MINS.	NO
2	OVEN (180 C)	2 HRS. 0 MINS.	NO
3	DESSICATOR	40 HRS. 0 MINS.	YES
4	VACUUM SOURCE	5 HRS. 0 MINS.	NO
ANALYST			
CLASSIFICATION 1		0 HRS. 0 MINS.	YES
CLASSIFICATION 2		3 HRS. 20 MINS.	YES
CLASSIFICATION 3		0 HRS. 0 MINS.	YES
CLASSIFICATION 4		0 HRS. 0 MINS.	NO

PARAMETER	METHOD	MEASURE POINT	BRANCH NO.	EXPECTED VALUE
TOTAL HARDNESS	EDTA	(1, 1)	21	187.894

TOTAL SAMPLE NUMBER EXPECTED
30.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS		TIMES	
1	MAGNETIC STIRRER	1 HRS. 11 MINS.	NO
2	AUTOMATIC BURET	1 HRS. 15 MINS.	NO
ANALYST			
CLASSIFICATION 1		0 HRS. 0 MINS.	YES
CLASSIFICATION 2		0 HRS. 25 MINS.	YES
CLASSIFICATION 3		0 HRS. 0 MINS.	YES
CLASSIFICATION 4		1 HRS. 25 MINS.	NO

PARAMETER	METHOD	MEASURE POINT	BRANCH NO.	EXPECTED VALUE
SULFATES	156C TURB	(1, 1)	21	73.464

TOTAL SAMPLE NUMBER EXPECTED
20.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS		TIMES	
1	NEPHELOMETER(HACH)	1 HRS. 20 MINS.	NO
2	MAGNETIC STIRRER	0 HRS. 47 MINS.	NO
	ANALYST		
	CLASSIFICATION 1	0 HRS. 0 MINS.	YES
	CLASSIFICATION 2	0 HRS. 50 MINS.	YES
	CLASSIFICATION 3	0 HRS. 0 MINS.	YES
	CLASSIFICATION 4	2 HRS. 10 MINS.	NO

PARAMETER	METHOD	MEASURE POINT	BRANCH NO.	EXPECTED VALUE
CHLORIDES	CHLOR TITR	(1, 1)	21	6.892

TOTAL SAMPLE NUMBER EXPECTED
20.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS		TIMES	
1	AUTOMATIC BURET	0 HRS. 50 MINS.	NO
	ANALYST		
	CLASSIFICATION 1	0 HRS. 0 MINS.	YES
	CLASSIFICATION 2	1 HRS. 40 MINS.	YES
	CLASSIFICATION 3	0 HRS. 0 MINS.	YES
	CLASSIFICATION 4	2 HRS. 30 MINS.	NO

PARAMETER	METHOD	MEASURE POINT, BRANCH NO., EXPECTED VALUE		
VOL SUSP SOLIDS	160D FIX RES NF	(1, 1)	21	7.341

TOTAL SAMPLE NUMBER EXPECTED
20.0 SAMPLES

TOTAL RESOURCES ASSIGNED				WAS CONSTRAINT VIOLATED
	ITEMS	TIMES		
1	ANAL BALANCE	5 HRS.	0 MINS.	NO
2	OVEN (105 C)	40 HRS.	0 MINS.	YES
3	DESSICATOR	80 HRS.	0 MINS.	YES
4	VACUUM SOURCE	10 HRS.	0 MINS.	NO
	ANALYST			
	CLASSIFICATION 1	0 HRS.	0 MINS.	YES
	CLASSIFICATION 2	9 HRS.	10 MINS.	YES
	CLASSIFICATION 3	0 HRS.	0 MINS.	YES
	CLASSIFICATION 4	0 HRS.	0 MINS.	NO

PARAMETER	METHOD		MEASURE POINT, BRANCH NO., EXPECTED VALUE		
TOTAL PHOSPHATES	TECHNICON-SM223C		(1, 1)	21	0.653
	TECHNICON-SM223C	*	(2, 1)	20	1.000

TOTAL SAMPLE NUMBER EXPECTED
40.0 SAMPLES

TOTAL RESOURCES ASSIGNED				WAS CONSTRAINT VIOLATED
	ITEMS	TIMES		
1	TECH AUTOANALYZER2	2 HRS.	0 MINS.	NO
2	HOTPLATE	1 HRS.	20 MINS.	NO
	ANALYST			
	CLASSIFICATION 1	0 HRS.	0 MINS.	YES
	CLASSIFICATION 2	0 HRS.	0 MINS.	YES
	CLASSIFICATION 3	4 HRS.	30 MINS.	YES
	CLASSIFICATION 4	0 HRS.	0 MINS.	NO

PARAMETER	METHOD	MEASURE POINT, BRANCH NO., EXPECTED VALUE
TNT		

TOTAL SAMPLE NUMBER EXPECTED
0.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS	TIMES		
1 GAS CHROM WI FID	0 HRS.	0 MINS.	NO
ANALYST			
CLASSIFICATION 1	0 HRS.	0 MINS.	YES
CLASSIFICATION 2	0 HRS.	0 MINS.	YES
CLASSIFICATION 3	0 HRS.	0 MINS.	YES
CLASSIFICATION 4	0 HRS.	0 MINS.	NO

PARAMETER	METHOD	MEASURE POINT, BRANCH NO., EXPECTED VALUE		
CALCIUM	110C EDTA TITR	(1, 1)	21	36.956

TOTAL SAMPLE NUMBER EXPECTED
20.0 SAMPLES

TOTAL RESOURCES ASSIGNED			WAS CONSTRAINT VIOLATED
ITEMS	TIMES		
1 AUTOMATIC BURET	0 HRS.	50 MINS.	NO
2 MAGNETIC STIRRER	0 HRS.	47 MINS.	NO
ANALYST			
CLASSIFICATION 1	0 HRS.	0 MINS.	YES
CLASSIFICATION 2	0 HRS.	0 MINS.	YES
CLASSIFICATION 3	2 HRS.	10 MINS.	YES
CLASSIFICATION 4	0 HRS.	0 MINS.	NO

PARAMETER	METHOD	MEASURE POINT, BRANCH NO.,	EXPECTED VALUE
ALKALINITY	ALK TITR	(1, 1) 21	126.942

TOTAL SAMPLE NUMBER EXPECTED
20.0 SAMPLES

TOTAL RESOURCES ASSIGNED ITEMS	TIMES	WAS CONSTRAINT VIOLATED
1 EXPD SCALE PH MET	2 HRS. 40 MINS.	NO
2 PH PREPARATION	1 HRS. 0 MINS.	NO
ANALYST		
CLASSIFICATION 1	6 HRS. 0 MINS.	YES
CLASSIFICATION 2	2 HRS. 5 MINS.	YES
CLASSIFICATION 3	0 HRS. 0 MINS.	YES
CLASSIFICATION 4	0 HRS. 0 MINS.	NO

PARAMETER	METHOD	MEASURE POINT, BRANCH NO.,	EXPECTED VALUE
TURBIDITY	HACH TURBIDMETER	(1, 1) 21	0.157

TOTAL SAMPLE NUMBER EXPECTED
20.0 SAMPLES

TOTAL RESOURCES ASSIGNED ITEMS	TIMES	WAS CONSTRAINT VIOLATED
1 HACH TURBIDMETER	0 HRS. 40 MINS.	NO
ANALYST		
CLASSIFICATION 1	0 HRS. 0 MINS.	YES
CLASSIFICATION 2	2 HRS. 45 MINS.	YES
CLASSIFICATION 3	0 HRS. 0 MINS.	YES
CLASSIFICATION 4	0 HRS. 0 MINS.	NO

PARAMETER	METHOD	MEASURE POINT, BRANCH NO., EXPECTED VALUE		
ACIDITY	SM 201	(1, 1)	21	183.874

TOTAL SAMPLE NUMBER EXPECTED
20.0 SAMPLES

TOTAL RESOURCES ASSIGNED ITEMS	TIMES	WAS CONSTRAINT VIOLATED
1 EXPD SCALE PH MET	1 HRS. 0 MINS.	NO
2 PH PREPARATION	1 HRS. 0 MINS.	NO
ANALYST		
CLASSIFICATION 1	0 HRS. 0 MINS.	YES
CLASSIFICATION 2	2 HRS. 45 MINS.	YES
CLASSIFICATION 3	0 HRS. 0 MINS.	YES
CLASSIFICATION 4	0 HRS. 0 MINS.	NO

TOTAL ALLOCATIONS FOR THESE ITEMS

	ITEM	# OF PARAMETERS ITEM IS USED FOR	TOTAL TIME	WAS CONSTRAINT VIOLATED	AMOUNT OF VIOLATION	VAN SPACE REQUIRED
1	EXPO SCALE PH MET	2	3 HRS. 40 MIN.	NO	0 HRS. 0 MINS.	4.00
3	PH PREPARATION	3	5 HRS. 0 MIN.	NO	0 HRS. 0 MINS.	8.00
4	PH MEASUREMENT	1	1 HRS. 0 MIN.	NO	0 HRS. 0 MINS.	3.00
5	AUTOMATIC BURET	3	2 HRS. 55 MIN.	NO	0 HRS. 0 MINS.	8.00
7	CONDUCTIVITY METER	1	1 HRS. 0 MIN.	NO	0 HRS. 0 MINS.	6.00
8	ANAL BALANCE	4	21 HRS. 15 MIN.	NO	0 HRS. 0 MINS.	5.00
9	OVEN (105 C)	3	150 HRS. 0 MIN.	YES	126 HRS. 0 MINS.	6.00
10	OVEN (180 C)	2	12 HRS. 0 MIN.	NO	0 HRS. 0 MINS.	4.00
11	DESSICATOR	4	340 HRS. 0 MIN.	YES	316 HRS. 0 MINS.	4.00
12	TECHNICON	2	6 HRS. 0 MIN.	NO	0 HRS. 0 MINS.	20.00
17	VACUUM SOURCE	2	15 HRS. 0 MIN.	NO	0 HRS. 0 MINS.	0.0
18	MAGNETIC STIRRER	3	2 HRS. 47 MIN.	NO	0 HRS. 0 MINS.	1.00
19	NEPHELOMETER(HACH)	1	1 HRS. 20 MIN.	NO	0 HRS. 0 MINS.	6.00
24	TECH AUTOANALYZER2	1	2 HRS. 0 MIN.	NO	0 HRS. 0 MINS.	5.00
27	HACH TURBIDMETER	1	0 HRS. 40 MIN.	NO	0 HRS. 0 MINS.	4.00
28	HOTPLATE	1	1 HRS. 20 MIN.	NO	0 HRS. 0 MINS.	18.00

TOTAL VAN SPACE

TOTAL VAN SPACE ALLOCATED = 100.000 WAS CONSTRAINT VIOLATED? NO AMOUNT OF VIOLATION = 0.0

GRAND TOTAL ANALYSIS TIME

ANALYST	TOTAL TIME	CONSTRAINT VIOLATED?	AMOUNT OF VIOLATION
CLASSIFICATION 1	25 HRS. 0 MIN.	YES	11 HRS. 0 MIN.
CLASSIFICATION 2	56 HRS. 45 MIN.	YES	42 HRS. 45 MIN.
CLASSIFICATION 3	23 HRS. 10 MIN.	YES	2 HRS. 10 MIN.
CLASSIFICATION 4	6 HRS. 5 MIN.	NO	0 HRS. 0 MIN.

TOTAL COST

TOTAL COST = $ 0.0 WAS CONSTRAINT VIOLATED? NO AMOUNT OF VIOLATION = $ 0.0

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*OPTIONS IN EFFECT*  NOID,EBCDIC,SOURCE,NOLIST,DECK,LOAD,NOMAP
*OPTIONS IN EFFECT*  NAME = SFCU     , LINECNT =       60
*STATISTICS*     SOURCE STATEMENTS =       27,PROGRAM SIZE =     1288
*STATISTICS*  NO DIAGNOSTICS GENERATED
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